# ARIZONA DEPARTMENT OF TRANSPORTATION

# ENGINEERING CONSULTANTS SECTION

# STATEMENT OF QUALIFICATIONS PACKAGE FOR CONTRACT NUMBER: 2014-006

## Project Development On-Call
## Multiple Selections

**December 2013**

**STATEMENT OF QUALIFICATIONS PACKAGE**
**CONTRACT NUMBER: 2014-006**
**PROJECT DEVELOPMENT ON-CALL**
**ADOT PROJECT NUMBER: Various**

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**SECTION I - PUBLIC ADVERTISEMENT**

**For Publication on Wednesday, December 4, 2013 and Wednesday, December 11, 2013**
**IN THE ARIZONA REPUBLIC NEWSPAPER**

**ARIZONA DEPARTMENT OF TRANSPORTATION ENGINEERING CONSULTANTS SECTION/PUBLIC NOTICE FOR PROJECT DEVELOPMENT ON-CALL /CONTRACT NUMBER:** 2014-006/**ADOT PROJECT NUMBER:** Various/**Statements Due:** January 29, 2014, 2:00 P.M. Arizona Time/The Arizona Department of Transportation (ADOT) is accepting Statement of Qualifications (SOQs) from Consultants to provide professional engineering services to aid in the development of projects located within the State of Arizona including projects from Local Public Agencies/The SOQ Package for Contract 2014-006 is available on the ECS website (http://www.azdot.gov/business/engineering-consultants/advertisements)/ADOT is an Affirmative Action/Equal Opportunity Employer.

**SECTION II - INFORMATION COPY TO CONSULTANTS**

REQUEST FOR STATEMENTS OF QUALIFICATIONS
FOR CONSULTANTS INTERESTED IN
**PROJECT DEVELOPMENT ON-CALL**

**ECS CONTRACT NUMBER:** 2014-006
**ADOT PROJECT NUMBER:** Various

**Statements Due:** January 29, 2014, 2:00 P.M. Arizona Time

All format requirements, submittal guidelines, instructions and documentation submission contained in this SOQ Package are for the ECS Contract Number and ADOT Project Number referenced above. SOQ submittal failing to follow the format, online submittal guidelines or any other instructions outlined in this SOQ Package **shall be rejected**.

ECS reserves the right to reject any and all SOQs, cancel the advertisement, negotiations or contract at any time in the best interest of the State.

SOQs will be accepted from any prime Consultant prequalified through ECS and properly registered with the Arizona Board of Technical Registration (BTR) at the time the SOQ is submitted to ECS. In addition, the prime Consultant shall have all the proper Arizona Licenses and/or registrations for the services the firm is to perform under this contract. This contract does require a Principal or Officer of the Firm responsible for this contract that is properly registered with the BTR at the time of SOQ submittal. It is the prime Consultant's responsibility to verify that all Subconsultants in the SOQ submittal have the proper Arizona licenses and/or registrations, and DBE certification if applicable, for the services the Subconsultants are to perform under this contract.

Consultants downloading SOQ proposals are required to register to receive notifications of SOQ Amendments, deadline changes or any other contract information. Any Amendments issued as part of an SOQ Package shall be signed and included in the SOQ submittal. Failure to do so shall result in rejection of the proposal. See **Section V** for further instruction.

The selected prime Consultant(s) shall provide on-call professional engineering services to aid in the development of projects located within the State of Arizona including projects from Local Public Agencies.

ECS may select 20 or more prime Consultants from among those submitting SOQ for further consideration. Previous experience in environmental planning, roadway engineering, traffic design, materials / geotechnical and survey & mapping will be a main factor in the selection.

A firm proposing as a prime consultant is not permitted to serve as a Subconsultant on another contract within the contract series. By submitting an SOQ as a prime consultant, the firm is stating that they will not be proposed on any other project team as a Subconsultant. In addition, it is the responsibility of the firm proposing as a prime consultant to ensure that prior to their submittal of their SOQ, they have written acknowledgement from their proposed subconsultants that the subconsulting firms will not submit an SOQ themselves as a prime consultant (copies of the written acknowledgment shall be kept on file, and available to submit to ECS upon request). **Any firm that has submitted an SOQ as a prime consultant and is identified as a subconsultant in another prime consultant's proposal shall have their prime consultant SOQ submission rejected. If a Prime Consultant lists firms as Subconsultants in its SOQ, the Prime Consultant must be able to provide ADOT with evidence, if requested, of written consent provided by the Subconsultant firms that are listed as part of their Prime Consultant's SOQ, or that Prime Consultant's SOQ will be rejected.**

Effective the date of the first public advertisement of this contract, no further contact is allowed with any ADOT personnel concerning this project except for the Pre-Submittal meeting and questions of an administrative or contractual nature that shall be submitted in writing to the attention of the assigned ECS Contract Specialist at the address below. This restriction is in effect until selection has been announced. The Pre-Submittal meeting has been scheduled for December 17, 2013 at 3 pm at the ADOT Human Resource Development Center located at 1130 N. 22nd Ave.; Phoenix, AZ 85009. The ADOT Project Manager (ADOT PM) will attend to address any questions at this time. Following the Pre-Submittal meeting, no further contact regarding this contract shall be allowed with any ADOT personnel except for those in ECS. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting TRISTA ELLIS at (602) 712-

7668 with your name, voice phone number and TDD phone number, if applicable. Requests for accommodations shall be made 48 hours in advance of the event to allow time to arrange the accommodation.
**Questions, in writing, shall be received until January 15, 2014 at 2:00 P.M. Arizona Time. No further questions shall be accepted after the time specified.** All Consultants will be notified of any Consultant's request for information and ECS' response(s) to the question(s). Information shall be posted on the ECS website and emailed to those Consultants that have registered for project updates. Any violation of the contact restrictions may be grounds for rejection of the Prime Consultant's SOQ.

Trista Ellis
Contract Specialist
Engineering Consultants Section
Phone: (602) 712-7668
Email: tellis@azdot.gov

Submit SOQs expressing interest in the above referenced project following ECS Online SOQ Submittal Instructions found in **Section XII** until 2:00 P.M. Arizona Time on the date shown above. No SOQs shall be accepted after the date and time specified. Hard copies of SOQs shall not be accepted. Oral interviews may be held in the selection process.

Submission of the SOQ requires completing the online ***Consultant Information Page*** (CIP). **Failure to completely and correctly fill out all sections of the CIP shall result in rejection of the SOQ.** To complete the CIP, begin by selecting the prime Consultant's name and appropriate location/address from which the contract will be administered from the Consultant Company dropdown list.

- If the prime Consultant's name is not listed in the *Consultant Firm* dropdown list, the Consultant is not currently pre-qualified with ECS and the Consultant cannot submit SOQ. Consultants not currently prequalified with ECS for 2014-2015 timeframe who intend to submit an SOQ for this proposed contract shall successfully submit the Prequalification application to ECS no later than **January 15, 2014 at 2:00 P.M. Arizona time.** The Prequalification application is found on the ECS website (http://www.azdot.gov/business/engineering-consultants/consultant-prequalification). Any submissions for Prequalification with ECS received **after January 15, 2014 at 2:00 P.M. Arizona time are not guaranteed to be reviewed by the SOQ due date.** For questions or further clarification regarding the ECS Prequalification, contact the ECS Front Desk at (602) 712-7525.

- If the prime Consultant is prequalified, the prime Consultant's contact person, address and phone number on file with ECS will automatically populate in the appropriate fields. Verify all information and update as needed. The Contact Person, Email Address, Telephone Number and Fax Number fields may be updated manually but the address must be updated by ECS by contacting the ECS Front Desk at (602) 712-7525. Allow two (2) business days for the address information to be changed in eCMS. Also, check the *ADOT Certified DBE Firm* box if your firm is a certified Disadvantaged Business Enterprise (DBE).

- Add each Subconsultant of the Project Team by clicking on the *Add New Sub-Consultant* link and completing the requested information. Select all Subconsultants in the prime Consultant's SOQ expected to work on the project and verify the location of each Subconsultant's office. Select the *Type of Work* the Subconsultant will perform on the project from the dropdown list. Check the *ADOT Certified DBE Firm* box if the Subconsultant is a certified DBE and provide the DBE Certification number, if any. **DBE Consultants and Subconsultants must be certified for the services proposed in the SOQ submittal.** eCMS does not track the DBEs used as direct expense vendors; therefore, **do not enter the DBE direct expense vendors into eCMS as Subconsultants.**

- If a Subconsultant's name is not in the eCMS database, contact ECS at (602) 712-7525. Allow two (2) business days to have the Subconsultant added to eCMS. Subconsultant information can be edited or deleted by the user at any time until the proposal is submitted.

A list of labor classifications anticipated to be used is listed on Attachment **G** in the Scope of Work.

The selected prime Consultant(s) may be required to attend a Pre-Negotiation meeting and shall bear the cost of their time.

The successful SOQ proposal(s) may be reviewed after contract award. Any digital reproduction including but not limited to copying and photographing of the winning SOQ(s) **is not permitted**. If the SOQ was submitted via CRYPTOCards, debrief information will be available in eCMS after contract award.

Within two (2) weeks after receiving notice of selection, the selected prime Consultant(s) and its Subconsultant(s) shall submit financial documentation to ADOT Office of Audit & Analysis (A&A) per **Section XV** of the SOQ Package. If the selected prime Consultant(s) and its Subconsultant(s) have recently submitted their most current financial documents to A&A, contact A&A at (602) 712-7042 to inquire if you need to resubmit financial documents. Additionally, the selected prime Consultant(s) and its Subconsultant(s) are required to comply with ADOT Advance Agreement Guideline per **Section XV** of the SOQ Package.

Prime Consultants and its Subconsultants that propose on an overhead basis shall have their Schedule of Indirect Costs and Financial Statements available for review by A&A **within six (6) months of the completion of the Consultant's preceding fiscal year-end (FYE)**. For example, a Consultant with December 31, 2011, FYE shall have the required information available **no later than June 30, 2012. Noncompliance with this requirement shall be considered failed negotiations unless waived in writing by the State.**

The items outlined above represent the information needed to begin the audit review process. Additional information and supporting documentation may be requested. Failure to comply with audit requirements within the established timeframes may be considered failed negotiations. Questions regarding ADOT's audit requirements or related information shall be directed to A&A at (602) 712-7042.

All selected prime Consultant(s) shall be required to establish a local office in the State of Arizona **prior** to the Notice to Proceed (NTP) date if one does not already exist.

Professional liability insurance is required.

The boilerplates for all ECS contracts are non-negotiable.

Partnerships (joint-ventures) are not allowed.

All materials submitted in accordance with this solicitation become the property of the State of Arizona.

Inclusion of cost, work-hour and/or plan-sheet estimates in the SOQ is not allowed.

ADOT is an Affirmative Action/Equal Opportunity Employer

**SECTION III – DISADVANTAGED BUSINESS ENTERPRISES PROGRAM**
**ECS CONTRACT NUMBER:** 2014-006

**Disadvantaged Business Enterprises**

ADOT, also referred to as "Department" or "State," has established a Disadvantaged Business Enterprises (DBE) Program in accordance with the regulations of the U.S. Department of Transportation (USDOT), 49 CFR Part 26. ADOT has received federal financial assistance from the USDOT and as a condition of receiving this assistance, ADOT has signed an assurance that it will comply with 49 CFR Part 26.

It is the policy of ADOT to ensure that DBEs, as defined in 49 CFR Part 26, have an equal opportunity to receive and participate in federally-funded contracts. It is also ADOT's policy to:

1. Ensure nondiscrimination in the award and administration of federally-funded contracts;
2. Create a level playing field on which DBEs can compete fairly for federally-funded contracts;
3. Ensure that the DBE program is narrowly tailored in accordance with applicable law;
4. Ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are counted as DBEs;
5. Help remove barriers to the participation of DBEs in federally-funded contracts; and
6. Assist in the development of firms that can compete successfully in the marketplace;
7. It is also ADOT's policy to facilitate and encourage participation by Small Business Concerns (SBCs) in ADOT contracts. ADOT encourages Consultants to take reasonable steps to eliminate obstacles to SBC's participation and to utilize SBCs in performing contracts.

The Federal regulations require a recipient of federal highway funding to implement an approved DBE Program that consists of establishing a statewide DBE utilization goal and using race-neutral means to the maximum feasible extent to achieve the goal. Where race-neutral measures prove inadequate to achieve the goal, the State is required to use race-conscious measures, such as a DBE participation goal for individual contracts.

The Department has established an overall annual goal for DBE participation on Federal-aid contracts. The Department intends for the goal to be met with a combination of race-conscious efforts and race-neutral efforts. Race-conscious participation occurs where the prime Consultant uses a percentage of DBEs to meet a contract-specified goal. Race-neutral efforts are those that are, or can be, used to assist all small businesses or increase opportunities for all small businesses.

ADOT is required to collect data on all DBE participation to report to FHWA, whether or not there is a stated DBE goal on the contract. Prime Consultants should refer to Sections 4.47 and 4.48 of the contract for information on DBE reporting requirements. Accurate reporting is needed to track DBE participation.

**A DBE goal of 11.13% has been established on this contract.** Prime Consultants are encouraged to obtain DBE participation above and beyond the goal on this contract. The DBE goal attainment will be monitored on a Task Order by Task Order basis to help ensure that the overall DBE goal is met on the contract.

Prime Consultants shall indicate their commitment to meeting the contract DBE goal by signing the *SOQ Proposal Certification Form*, found in **Section XIII**, and by completing the DBE Information Section in eCMS' *Consultant Information Page* when submitting the SOQ.

**DBE Consultants and Subconsultants must be certified for the services proposed in the SOQ submittal. DBE Consultants and Subconsultants performing work for services for which they are not certified will not be counted towards the DBE goal.** Furthermore, proposing DBE Consultant, or Small Business Concern (SBC) Consultant or Subconsultants to provide services they are not certified in may negatively impact the prime Consultant's score. To confirm the firm's DBE certification and work categories the firm is certified to perform, visit ADOT *Arizona Unified Transportation Registration and Certification System* (AZ UTRACS) or contact ADOT Business Engagement and Compliance Office (BECO) at (602) 712-7761.

Prime Consultants are **required to register** their firms in AZ UTRACS. Prime Consultants shall specify the anticipated role of **all** certified DBE firms who will participate as Subconsultants in this contract and shall be noted in eCMS' *Consultant Information Page* (CIP), *Subconsultants* subsection. The DBE Subconsultants' experience and their role in the contract shall also be explained in SOQ **Section VI**, Part D (Evaluation Criteria), 3.b. (Relevant firm experience of Key Subconsultants).

**eCMS does not track the DBEs used as direct expense vendors; therefore, do not enter the DBE direct expense vendors into eCMS as Subconsultants when submitting SOQs.**

The selected prime Consultants shall submit the *On-Call DBE Goal Commitment Form*, found in **Section VIII**, with initial Cost Proposal certifying the DBE goal shall be met on the contract and each Task Order or Good Faith Efforts shall be demonstrated.

After the contract has been executed, the selected prime Consultant(s) is/are required to submit the following documents with every Task Order:

1. Certification that the prime Consultant shall meet or exceed the established DBE goal stated in the SOQ and contract by providing the following documents:

   a. A ***Consultant Intended DBE Participation Affidavit***, if the prime Consultant is a DBE firm. The form is provided in **Section VIII** of the SOQ Package and shall be submitted with every Task Order.

   **OR**

   b. A ***Consultant Intended DBE Participation Affidavit*** and a completed ***Subconsultant Intended DBE Participation Affidavit*** for each DBE Subconsultant. The forms are provided in **Section VIII** of the SOQ Package and shall be submitted with every Task Order.

   **OR**

2. Certification that the prime Consultant has made an adequate good faith effort to meet the goal, even if it did not succeed in obtaining enough DBE participation to do so. Document the good faith efforts on the ***Consultant Certification of Good Faith Efforts*** form. The link to the form is provided in **Section VIII** of the SOQ Package and shall be submitted with every Task Order.

   **THE TASK ORDERS WILL NOT BE EXECUTED IF ONE OF THE ABOVE CONDITIONS ARE NOT MET AND/OR A CONSULTANT FAILS TO SUBMIT THE REQUIRED DBE PARTICIPATION FORMS WITH EACH TASK ORDER.**

ADOT Business Engagement and Compliance Office (BECO) will make the determination whether the prime Consultant has made a satisfactory good faith effort to secure certified DBEs to meet the advertised Contract/Task Order goal in accordance with 49 CFR Part 26. If BECO determines that the prime Consultant has not met the DBE goal, or has not made an adequate good faith effort to meet the DBE goal, ADOT will terminate the Task Order negotiations with the prime Consultant and will negotiate with the next highest ranked Prime Consultant. If the prime Consultant wishes to dispute the Good Faith Effort determination, the prime Consultant may escalate the decision according to the levels outlined in Section 4.09 (Dispute Escalation) of the contract. The BECO will be represented at each escalation level with the goal of resolving the matter at the lowest possible level. **The decision of the BECO is final.**

Before the first Payment Report/Invoice is submitted to ECS for each Task Order, the prime Consultant is required to logon to the AZ UTRACS *DBE Labor & Compliance* module at https://adot.dbesystem.com/ and enter the name, contact information, and subcontract budget amounts for all DBE and non-DBE Subconsultants and direct expense vendors performing any work on the project.

Prime Consultants shall submit a payment report on a monthly basis, Per Section 4.04 (Payment Reports/Invoices) of the contract, indicating the amounts earned by and paid to all Subconsultants working on the contract in the manner detailed in the Progress Payment Report (PPR) format for Lump Sum by Task Order. All DBE and non-DBE Subconsultants, lower-tier Subconsultants and direct expense vendors shall confirm their payments received through AZ UTRACS *DBE Labor & Compliance* module. The prime Consultant may credit second-tier subcontracts issued to DBEs by non-DBE Subconsultants. Any second-tier subcontract to a DBE used to meet the goal shall meet the requirements of a first-tier DBE subcontract.

**Fostering Small Business Participation**

49 CFR Part 26.39 also requires that ADOT's DBE Program includes an element to incorporate contracting requirements to facilitate participation by Small Business Concerns (SBCs) in contract procurements for prime Consultants and Subconsultants. SBCs are for-profit businesses, registered to do business in Arizona that meets the Small Business Administration (SBA) size standards for average annual revenue criteria for its primary North American Industry Classification System (NAICS) code.

While the SBC component of the DBE Program does not require utilization goals on projects, **ADOT strongly encourages prime Consultants to utilize small businesses on their contracts** that are registered in AZ UTRACS, in addition to meeting the DBE certification requirement. Visit the AZ UTRACS, at https://adot.dbesystem.com/ to search for certified DBEs and registered SBCs that can be used on this contract.

**SECTION IV – ON-CALL CONTRACT TASK ORDER ASSIGNMENT**
**ECS CONTRACT NUMBER:** 2014-006

On-Call Contracts are used at the discretion of ADOT to expedite A&E projects under $500,000 and Construction Administration tasks. On-Call Contracts administered by ECS do not constitute a representation of any particular amount of work or guarantee any work will be ultimately assigned.

a) After the execution of an On-Call Contract, ADOT Project Manager (ADOT PM) generally assign Task Orders to prime Consultants in the following manner:

   a. When a project requires the services of an On-Call service contract, the ADOT PM will assign the project via a Task Order, based on the ranking of the prime Consultants (i.e., first Task Order will be assigned to the highest ranked prime Consultant, provided the prime Consultant has the required expertise to complete the assigned task.
   b. A Task Order Number and specific Scope of Work will be provided to the prime Consultant.
   c. The prime Consultant prepares a cost estimate for the project utilizing the items of cost contained in the contract.
   d. The ADOT PM reviews the cost estimate to ensure the proposed work-hour estimates are reasonable in comparison to ADOT's estimate and the costs are in compliance with the contract. If necessary, the work- hours are negotiated to an acceptable level.
   e. ADOT shall endeavor to distribute work as equitably as possible among all prime Consultants selected in each On-Call series. After the first round of Task Orders is assigned by rank order, tasks will be assigned with the goal of equalizing the cumulative dollar value awarded to every contracted prime Consultant in the On-Call series.
   f. On occasions, it may not be feasible to equitably distribute work in this manner. For example, if work on a new Task Order is closely related to or dependent on a previous Task Order, it may be deemed in the best interest of the State to assign the new task to the Consultant assigned the original task.
   g. ECS will review Task Order assignments and will periodically generate and evaluate reports of On-Call assignments to ensure that the work on On-Call contracts is distributed as equitably as feasible.

The *ECS Contract Award and Administration Rules* (referred to as ***ECS Rules*** hereinafter) Section 4.12 (On-Call Contract Task Order Assignment) states each task authorization shall not exceed $500,000 and no contract shall exceed $2,000,000 per year without the ECS Manager's written approval. Standard On-Call contracts are established for three (3) years but may include an option to renew the contract for two (2) additional one-year extensions at ADOT's discretion. After the three (3) year contract limit, no new tasks shall be assigned without the ECS Manager's written approval, except in the best interest of the State.

The Construction Administration On-Call Task Orders may have higher limits and the value of the total related construction cost for the Task Order shall not exceed $10,000,000 based on ADOT's 5-Year Highway Construction Program.

The estimated value of each On-Call contract for this series is $912,625.00 and shall not exceed $6,000,000.00 without the ECS Manager's prior written approval.

**SECTION V – SOQ FORMAT INSTRUCTIONS**
**ECS CONTRACT NUMBER:** 2014-006

**The TOTAL PAGE LIMIT is 15 pages for the SOQ submittal. All SOQs shall be submitted online. Hard copies of SOQ proposals are not accepted.**

1. **Prime Consultants shall follow the applicable online submittal instructions found in Section XII**. The SOQ proposal submitted must be one PDF file and shall not exceed 15MB. Only **one** (1) PDF file is permitted per submittal.

2. **Format** – Follow the exact format outlined in **Section VI**, as formats for each advertisement/SOQ Package may vary. **Failure to follow the format as outlined in this SOQ shall result in rejection of the SOQ.**

3. **Number of Pages** – Number of pages shall not exceed the page limit specified above, beginning with the Introductory Letter and ending with the last page. **Failure to follow the page limit specified in the SOQ shall result in rejection of the SOQ. DO NOT ADD ANY ADDITIONAL PAGES, SUCH AS COVER PAGES, DIVIDER/BREAK PAGES, FORMS, DOCUMENTS, DIVIDER PAGES AND ATTACHMENTS THAT INCLUDE BLANK OR PRINTED PAGES, THAT ARE NOT SPECIFICALLY LISTED AS REQUIRED IN THE SOQ OR THE PROPOSAL SHALL BE REJECTED.**

4. **Page Parameters** – A page is defined as an 8½ x 11-inch, blank or printed. All proposal pages are counted from beginning to end of the electronic document to arrive at the maximum allowable page limit stated in the SOQ Package. All pages are counted as pages.

5. **Print and Font Size** – ECS strongly recommends that Consultants use a 10-point or larger font for the body of the proposal. The use of standard basic fonts, such as Arial and Times New Roman, found in all Microsoft software and print drivers is highly recommended in order to avoid any formatting issues which could result in an increase in the SOQ proposal page numbers after it is received online by ECS. The goal is to make the document clear and legible. Proposal scores will be adversely affected if SOQs are not legible or the font size is too small to read if printed by the Selection Panel members.

6. **Video or Multimedia Applications** – No video clips or other multimedia applications are allowed. Failure to adhere to the guidelines shall result in rejection of the SOQ.

7. **Amendments** – Before submitting the SOQ, check the ECS Current Advertisement page to look for any Amendments to the SOQ. Copy any amendments from the **Current Advertisements** page of the ECS website for the relevant project, sign the amendment acknowledging that it was received and append it to the SOQ proposal before uploading the completed document. Amendments shall not be counted towards the page limit and do not require page numbers. **Failure to copy, sign and include all issued Amendments with the SOQ shall result in rejection of the SOQ. Do not add additional pages, such as cover pages, divider/break pages, forms, documents, and attachments, including blank or printed pages in this section that are not specifically listed or requested in the SOQ, as these shall count toward the page count and shall cause the proposal to be rejected.** Extra sheets separating the main proposal from amendments should also not be included as this shall be counted as a page.

8. **Attachments** – The SOQ may require attachments but these shall not be included in the page count. **Do not add additional pages, such as cover pages, divider/break pages, forms, documents, and attachments, including blank or printed pages in this section that are not specifically listed or requested in the SOQ, as these shall count toward the page count and shall cause the proposal to be rejected.** Extra sheets separating the main proposal from attachments should also not be included as this shall be counted as a page.

9. **Commenting or User Rights Feature** – Enable the Commenting or User Rights Feature **before uploading** the SOQ. This SOQ will be reviewed electronically by the Selection Panel. **Adobe Professional Version 7 or above *may* be used for this purpose. As each firm uses a different version of Adobe, use an internet search engine or Help feature of the specific Adobe program used by the Consultant to find instructions on how to enable comments.**

10. **SOQ Submission**

    a. Submit the SOQ proposal to the **correct** contract number on the *Current Advertisements* page. **An SOQ submitted to the incorrect contract number shall result in rejection/non-acceptance of the SOQ.**

b. Submission of the SOQ requires completing the online *Consultant Information Page* (**CIP**). **Failure to completely and correctly fill out ALL sections of the CIP shall result in rejection of the SOQ.** To complete the CIP, begin by selecting the prime Consultant's name and appropriate location/address from which the contract will be administered from the *Consultant Company* dropdown list.

c. If the prime Consultant's name is not listed in the *Consultant Firm* dropdown list, the Consultant is not currently pre-qualified with ECS. Consultants not currently prequalified with ECS for **2014-2015** timeframe who intend to submit an SOQ for this proposed contract shall successfully submit the Prequalification application to ECS no later than **January 15, 2014 at 2:00 P.M. Arizona time.** The Prequalification application is found on the ECS website (http://www.azdot.gov/business/engineering-consultants/consultant-prequalification). Any submissions for Prequalification with ECS received **after January 15, 2014 at 2:00 P.M. Arizona time are not guaranteed to be reviewed by the SOQ due date.** For questions or further clarification regarding the ECS Prequalification, contact the ECS Front Desk at (602) 712-7525.

d. If the prime Consultant is prequalified, the prime Consultant's contact person, address and phone number on file with ECS will automatically populate in the appropriate fields. Verify all information and update as needed. The Contact Person, Email Address, Telephone Number and Fax Number fields may be updated manually but the address must be updated by ECS by contacting the ECS Front Desk at (602) 712-7525. Allow **two (2) business** days for the address information to be changed in eCMS. Also, check the *ADOT Certified DBE Firm* box if your firm is a certified DBE.

e. Add each Subconsultant of the Project Team by clicking on the *Add New Sub-Consultant* link and completing the requested information. Select all Subconsultants in the prime Consultant's SOQ expected to work on the project and verify the location of each Subconsultant's office. Select the Type of Work the Subconsultant will perform on the project from the dropdown list. Check the *ADOT Certified DBE Firm* box if the Subconsultant is a certified DBE and provide the DBE Certification number, if any. **DBE Consultants and Subconsultants must be certified for the services proposed in the SOQ submittal.** If a Subconsultant's name is not in the eCMS database, contact ECS at (602) 712-7525. Allow **two (2) business** days to have the Subconsultant(s) added to eCMS. Subconsultant information can be edited or deleted by the user at any time until the proposal is submitted.

11. **The online SOQ proposal shall follow the exact format outlined below:**

| | FORMAT CONTENT | MAXIMUM POINTS | TOTAL NUMBER OF PAGES |
|---|---|---|---|
| **PART A** | **INTRODUCTORY LETTER**<br>(Page 1) | | 1 |
| **PART B** | **SOQ PROPOSAL CERTIFICATION FORM**<br>(Page 2) | | 1 |
| **PART C** | **EVALUATION CRITERIA** (Pages 3-15) | | |
| | 1. Project Understanding& Approach | 45 | 13 |
| | 2. Project Team | 35 | |
| | 3. Firm Capability | 20 | |
| | 4. Past Performance | 0 thru -5 | |
| **PART D** | **SOQ PROPOSER'S SOLICITATION LIST**<br>(Required but shall **not** count toward page limit) | | |
| **PART E** | **AMENDMENTS**<br>(Required but shall **not** count toward page limit) | | |
| | **TOTALS** | **100** | **15** |

**SOQ submissions failing to follow all instructions outlined above and the applicable online SOQ guidelines shall be rejected. The Consultant will be notified in writing of the reason(s) for rejection.**

**SECTION VI – SOQ FORMAT AND EVALUATION CRITERIA**
**ECS CONTRACT NUMBER:** 2014-006

The following describes more specifically, the content of each part.

**PART A. INTRODUCTORY LETTER**

The Introductory Letter **shall be the first (1) page** of the SOQ and shall be addressed to:

Arizona Department of Transportation
Engineering Consultants Section
205 South 17th Avenue, Room 293E, Mail Drop 616E
Phoenix, Arizona 85007

The Introductory Letter should be no longer than **one (1) page** and shall contain the following items:

1. An expression of the Prime Consultant's interest in being selected for the project.
2. A statement confirming the commitment of key personnel identified in the submittal to the extent necessary to meet ADOT's quality and schedule expectations.
3. Provide the name and Professional Engineer's registration number of the Prime Consultant Principal, Officer of the Firm or Project Manager responsible for this contract that is properly registered with the BTR at the time the SOQ is submitted to ECS.
4. A summary of key points regarding the Prime Consultant's qualifications.
5. Signature of at least one (1) of the **authorized SOQ signers** indicated in the Consultant's 2014 – 2015 prequalification application.

**PART B. SOQ PROPOSAL CERTIFICATION FORM**

The *SOQ Proposal Certification Form* **shall be the second (2) page** of the SOQ. The certification statements are to ensure that prime Consultants are aware and in agreement with required Federal, State and ECS guidelines related to the award of this contract. The *SOQ Proposal Certification Form* shall be signed by one (1) of the **authorized SOQ signers** as indicated in the Consultant's 2014–2015 prequalification application. **Failure to sign and submit the certification form specified in Section XIII shall result in the SOQ proposal being rejected.**

**PART C. EVALUATION CRITERIA**

The Evaluation Criteria **shall begin on the third (3) page** of the SOQ. The SOQ proposal will be reviewed and scored based on the responses to the information requested. Follow the format in the discussion of qualifications and number responses to each category and subcategory exactly as they are listed below:

**1. Project Understanding and Approach (Maximum 45 points)**

a) Discuss generally the tasks involved in this project. Identify any special issues or problems that are likely to be encountered. Demonstrate clearly and concisely your understanding of the technical and institutional elements for which your Firm must deal with in this project.

b) Outline your proposed approach for dealing with the tasks and issues of this project.

c) Provide a tentative schedule indicating the duration and functional relationship of major tasks and key events. Discuss strategies to avoid or make up any slippage of the schedule. A graphical depiction may be included to describe the schedule.

**2. Project Team (Maximum 35 points)**

Provide a summary of experience and qualifications of each key team member, including Subconsultants. In particular, discuss the following:

a) Project Principal. Identify the person who (1) will be responsible for ensuring that adequate personnel and other resources are made available for this project; (2) will handle contractual matters, and; (3) will be ultimately responsible for the quality and timeliness of the Prime Consultant's performance. State that person's position and authority within the Firm. Discuss previous similar projects for which this person has performed a similar function.

b) Project Manager. Identify who will actively manage this project. Identify any projects that person will be involved with concurrently and time committed to each project. List recent similar projects for which this person has performed a comparable function. Discuss relevant experience, professional registrations, education and other components of qualifications applicable to this project.

c) Project Engineer(s) and/or Other Key Personnel. Identify other members of the Project Team including all Subconsultants who will provide special expertise or will perform key tasks. Describe their anticipated roles. Discuss their relevant experience, registration, education and other elements of qualification applicable to this project.

d) Construction Cost Estimator. Specify who will be responsible for construction cost estimating and that person's relative experience on projects similar to the one being submitted on.

e) On a matrix for each key team member identified, provide the following:

1) List key team member and professional registration number
2) Role of the key team member on this project
3) Percentage of time specifically anticipated on this project
4) List other projects each key member is currently working on or committed to in other proposals and percentage of time assigned/committed to those projects
5) Location from which they will work on this project
6) Role of the person on similar projects (not to exceed 2 projects)
7) For each project identified, list Consultant contract value, and project owner

f) In the case that any proposed previous similar project(s) for any of key team members were done for a firm other than the proposing firm, the SOQ must identify the name of the firm that the key team member was employed at when the project(s) work was done and the experience was gained.

**3. Firm Capability (Maximum 20 points)**

a) Discuss the Consultant's recent relevant experience, which should include at least five (5) projects of comparable character, size, budget and complexity and indicate clearly whether that experience was as a Prime Consultant or Subconsultant. **The projects listed may include no more than two (2) projects that reflect the individual experience of the Firm's owners (5% or more) when they were employed by or owned other firms.** For each project identified, provide the following:

1) Description of the project
2) Role of the Firm (Identify the work performed e.g., design, project management, etc.)
3) Key staff involved in the project
4) Prime Consultant contract amount for each project
5) Project owner

(Note: Subconsultant's experience shall be noted in Section 3.b below.)

b) Discuss recent relevant firm experience of your key Subconsultants. Describe any notable expertise, increase in capacity or other special capabilities of your Subconsultants (including DBEs and SBCs) that are critical to your proposal.

c) Provide the number of years the prime Consultant has been in business and briefly discuss the prime Consultant's financial and human resource capacity to complete a project of similar size and complexity to that of this project. Discuss quantitatively how this project would impact the current and anticipated workload of the office, which will perform this work. If "staffing up" will be necessary, discuss which areas and how that would be accomplished.

d) Describe your internal quality control procedures and indicate how your quality program would enhance the development of this project.

**4. Past Performance (Maximum of up to 5 points may be deducted from the total score)**

Consultants' past performance on ECS contracts will be determined based on the Consultants' **final** evaluation history for contracts executed **after July 1, 2010.** Up to five (5) points will be deducted from the Consultant's scores during the selection process on performance factors of evaluation for projects a firm has completed for the Department over the most current three-year timeframe. More information about the Consultant Evaluation Program Guidelines can be found in **Section XVI**.

ECS will apply the past performance scores once the Selection Panel has completed its scoring and has determined the firms' final average score. ECS will deduct points, if applicable, from the final average score for each firm based on performance ratings listed below:

| | |
|---|---|
| Performance rating of 1or 2 on 1 - 2 evaluation factors | -1 Point |
| Performance rating of 1or 2 on 3 - 4 evaluation factors | -2 Points |
| Performance rating of 1or 2 on 5 - 6 evaluation factors | -3 Points |
| Performance rating of 1or 2 on 7 - 8 evaluation factors | -4 Points |
| Performance rating of 1or 2 on 9 or more evaluation factors | -5 Points |

**PART D. SOQ PROPOSER'S SOLICITATION LIST**

The *SOQ Proposer's Solicitation List* shall be **inserted in front of any amendments** to the SOQ. In accordance with 49 CFR 26.11, ADOT is required to create and maintain a *Proposer's Solicitation List* to capture accurate data regarding the universe of DBE, non-DBE, and Small Business Concerns (**SBC**) Consultants and Subconsultants who expressed interest or were solicited to work on this contract. Proposers **must** complete the required information by listing each Subconsultant that (1) prime Consultant directly solicited to be a part of this contract, (2) contacted the prime Consultant expressing interest in this contract and (3) prime Consultant ultimately proposes to utilize on this contract. ADOT Business Engagement and Compliance Office (**BECO**) will review this form to ensure compliance with 49 CFR 26.11. Firms may be contacted for clarification or additional information. **Failure to complete this form in its entirety and submit it with the SOQ proposal shall result in rejection of the SOQ proposal.**

**PART E. AMENDMENTS**

Attach a signed copy of all amendments issued for this SOQ. Amendments do not count towards the page count. **Failure to include all amendments issued shall result in the SOQ being rejected.** See **Section V** for further instruction.

**SECTION VII – PANEL RANKING FORMS**

To review the Panel Ranking Forms that will be used to evaluate the SOQ, use the following link:
http://www.azdot.gov/docs/business/design-lump-sum-panel-comment-form.pdf

**SECTION VIII – DBE PROGRAM INFORMATION AND FORMS**

**DBE Program Information**

To review the DBE Program Information, use the following link:
http://www.azdot.gov/business/engineering-consultants/DisadvantagedBusinessEnterprise(DBE)Program

**Arizona Unified Transportation Registration and Certification System (AZ UTRACS)**

To confirm DBE certification and work certified to perform, use the following link:

https://adot.dbesystem.com/

**SOQ Proposer's Solicitation List**

To review the SOQ Proposer's Solicitation List, use the following link:

http://www.azdot.gov/docs/default-source/business/soq-proposer's-solicitation-list.pdf

**On-Call Contract DBE Goal Commitment Form**

To review the DBE Goal Commitment Form, use the following link:
http://www.azdot.gov/docs/business/on-call-dbe-commitment.pdf

**Consultant Intended DBE Participation Affidavit**

To review the Consultant Intended DBE Participation Affidavit, use the following link:
http://www.azdot.gov/docs/business/dbe-consultant-intended-participation-affidavit.pdf

**Subconsultant Intended DBE Participation Affidavit**

To review the Subconsultant Intended DBE Participation Affidavit, use the following link:
http://www.azdot.gov/docs/business/dbe-subconsultant-intended-participation-affidavit.pdf

**Consultant Certification of Good Faith Efforts**

To review the Consultant Certification of Good Faith Efforts, use the following link:
http://www.azdot.gov/docs/default-source/businesslibraries/adot-good-faith-certificate.pdf

**SECTION IX – STANDARDS OF CONDUCT AND CONFLICT OF INTEREST**

To review the ECS Rules, Section 1.10, for all Standards of Conduct and Conflict of Interest statutes and policies, use the following link:
http://www.azdot.gov/docs/business/ecs-rules.pdf

**SECTION X – LOBBYING CERTIFICATION**

To review the Lobbying Certification, use the following link:
http://www.azdot.gov/docs/business/lobby-certification.pdf

**SECTION XI – PROJECT SUMMARY/REFERENCE MATERIAL AVAILABILITY**

To review all documents regarding this project, ***copy and paste the following link in your browser:***

ftp://ftp.azdot.gov/
Username: ECS
Password: Ecs_01 (Password is case-sensitive.)

**SECTION XII – SOQ ONLINE SUBMITTAL INSTRUCTIONS**

To access the SOQ online submittal instructions, use the following links:

**For Consultants with ECS CRYPTOCard Access:**
http://www.azdot.gov/docs/business/online-soq-submission-guidelines-and-instructions-(for-firms-with-ecs-contracts).pdf

**For Consultants without ECS CRYPTOCard Access:**
http://www.azdot.gov/docs/business/online-soq-submission-guidelines-and-instructions-(for-firms-with-no-ecs-contracts).pdf

**SECTION XIII – SOQ PROPOSAL CERTIFICATION FORM**

To review, complete and submit the SOQ Proposal Certification Form with the SOQ, use the following link:
http://www.azdot.gov/docs/business/soq-certification.pdf

**SECTION XIV – PAYMENT REPORT FORMAT**

To review the Lump Sum by Task Order Payment Report Format, use the following link:

http://www.azdot.gov/docs/default-source/ecs/lsto-rev-01-16-13.xls

**SECTION XV – ADOT ADVANCE AGREEMENT GUIDELINE AND ADOT CONSULTANT AUDIT CRITERIA**

To review the ADOT Advance Agreement Guideline, use the following link:

http://azdot.gov/docs/about/adot-advance-agreement-guideline.pdf?sfvrsn=0

To review the ADOT Consultant Audit Criteria (Information Bulletins 08-03 & 09-04), use the following links:
http://www.azdot.gov/docs/businesslibraries/08-03.pdf
http://www.azdot.gov/docs/businesslibraries/09-04.pdf

**SECTION XVI – CONSULTANT EVALUATION PROGRAM GUIDELINES**

To review Consultant Evaluation Program Guidelines, use the following link:

http://www.azdot.gov/docs/business/evaluation-program-guidelines.pdf

**SECTION XVII – CONTRACT BOILERPLATE**

To review the Lump Sum by Task Order sample contract, use the following link:
http://www.azdot.gov/docs/default-source/ecs/lump-sum-by-to.pdf

**SECTION XVIII – DICTIONARY OF STANDARDIZED WORK TASKS**

To review the Dictionary of Standardized Work Tasks, use the following link:
http://www.azdot.gov/docs/default-source/ecs/dictionary-of-standardized-work-tasks-fy14.pdf

**SECTION XIX – SCOPE OF WORK**

# ARIZONA DEPARTMENT OF TRANSPORTATION
# INTERMODAL TRANSPORTATION DIVISION
# STATEWIDE PROJECT MANAGEMENT GROUP

# SCOPE OF WORK

# PROJECT DEVELOPMENT ON-CALL
# VARIOUS PROJECT NUMBERS
# VARIOUS TRACS NUMBERS

## December 2013

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## 100 GENERAL INFORMATION

NOTE: This scope of work is presented in two parts. The Task Order Scope of Work for all State-Wide projects (State) is contained in this section. It includes information specific to this contract.
The Local Public Agencies' (LPAs) requested projects are also presented within this scope of work and specified within the information provided. Each task order will need to be clarified for specifics.

The section Dictionary of Standardized Work Tasks is presented as a section within the Scope of Work. It includes information that is common to Consultant design contracts. The description of the specific work tasks will be presented in the Task Scope of Work. Not all the work tasks described are necessary on every project. The chapters related to the delivery of projects' requirements are described in the Local Public Agency Projects Manual and other manuals.

## 110 LOCATION

All projects to be completed for this contract are located within the boundaries of the State of Arizona. They are on existing or proposed routes or other locations that are either part of, or being considered for incorporation into, the State of Arizona Highway System. The specific location of an assigned project will be identified in the Task Order Scope of Work.

The specific location for the LPA projects will be defined and listed in the Council of Governments or Metropolitan Planning Organization (COG or MPO) programs as Federal-Aid projects within the various statewide Local Public Agency (LPA) jurisdictions.

## 120 DESCRIPTION

The work description is presented to cover both State and Local Public Agency development projects. For LPA projects, the work is designed to expedite the delivery of transportation construction projects identified in the COG or MPO programs.

The Consultant may be required to provide the following services, but not limited to all aspects of engineering, landscape and/or architectural. The projects can include, but are not limited to, highway construction/re-construction (design of roads); survey; intersection improvements; minor and intermediate traffic interchange improvements; rockfall containment design; fencing; snow fence; medians; curb & gutter and sidewalk; passing and climbing lanes; drainage, erosion; retaining walls; signing and striping; landscaping and irrigation; pedestrian and bicycle paths; computer modeling and visualization; native plant surveys and inventories; land graphic layouts on site; environmental analyses; erosion control plans; historic architecture evaluation and design; coordination with the public and governmental agencies; and general right of way and ownership.

Specific projects may require data collection; surveying and mapping; CADD; geotechnical investigation, geotechnical analysis and design; structural investigation, structural analysis and design; pavement design; utility and railroad coordination; environmental planning, ROW coordination, traffic engineering analysis and design; roadside analysis and design; hydrology/hydraulic analysis and design: drainage design; roadway infrastructure analysis and design: public relations, and other activities related to the scoping, design and post-design of infrastructure projects.

All projects shall be in English units unless otherwise specified.

For all development projects, the Consultant duties may include some or all items from the list below but are not limited to:

A. The firm may be required to perform all pre-construction activities. This may include project management, development of project scoping documents, preparation of designs and construction plans, technical reports and specifications, quantity computations and related construction documents.

B. Provide coordination with other ADOT services/sections and outside agencies as required for successful completion of the projects. Typically known coordination requirements include, but are not limited to ADOT Districts and the following ADOT groups and sections: Statewide/Urban Project Management, Local Public Agency Section, Materials, Traffic, Bridge, Roadway, Survey and Mapping, Contract and Specifications, Environmental, Right-of-way and Utilities & Railroads, Facilities and Roadside. Agencies and outside stakeholders include, but are not limited to FHWA, U.S. Corps of Engineers, U.S. Forest Service, Bureau of Land Management, Local Public Agencies, Indian Communities and Public Utilities. Non- technical coordination may involve MPO/COG staff and transit agencies.

C. Develop and maintain program delivery scheduling.

D. Prepare and Review designers construction cost estimate.

E. Complete, update and maintain scoping and environmental documents as required.

F. Prepare project plans through PS&E during the development process.

G. Identify and resolve project issues prior to design that would preclude delivery of a construction project in the time allocated in the COG/MPO TIP/STIP. Such issues will include utility relocations, right-of-way obstacles, environmental / cultural concerns and local public agency / developer enhancements.

H. Provide special studies, reports and plans that will reduce the segment design duration.

I. Provide mapping as needed.

J. Develop schedules for each project.

K. Develop construction segments and construction project sequencing with the intent to clear major utility obstructions prior to advertisement.

L. Report regularly on issues affecting design, construction budgets and schedules with respect to the Master Schedule.

M. Maintain an appropriately staffed local office during the length of the contract.

N. Provide project manager(s) for any type of project.

O. Prepare utility agreements.

P. Prepare major utility relocation designs.

Q. Assist in the preparation of Joint Project Agreements (when applicable) with the local public agency.

R. Provide support for the public involvement process.

S. Provide involvement in daily issues of respective project design or construction.

T. Provide team members to help conduct Road Safety Assessments (RSAs).

U. Design High Risk Rural Road Program's (HRRRP) projects.

V. Provide post design services as necessary for successful construction of the projects.

**130 PURPOSE**

The purpose of projects developed under this contract is to improve the safety and operational characteristics of the subject roadways or facility. This contract establishes a pool of Consultants to respond on an on-call (as-needed) basis to perform the necessary services to complete these projects, acting under the direction of ADOT under Statewide Project Management Group (SPMG) Contract Administration.

**140 CONSTRUCTION COST**

Different sources can be used to fund a project; for example, the High Risk Rural Roads Program (HRRRP) provides set aside funds for construction and operational improvements on high risk rural roads. Projects may utilize resources other than federal funds to design or construct a project. The budget for each project to be completed under this contract will be outlined in the Task Order Scope of Work.

**150 AGENCY ORGANIZATION**

The Arizona Department of Transportation (ADOT) retains development Consultants to perform a variety of engineering and architectural services. The ensuing sections define the responsibilities of ADOT and the Consultant and the scope of services to be provided.

An employee from ADOT Statewide Project Management Group shall be assigned to be a liaison between ADOT and the Consultant. This person shall be referred to as the Contract Manager (CM). The CM will assign projects to the Consultants and

identify the Project Manager/Task Manager (PM), this person may be from ADOT. The PM is responsible for managing the project development process. The PM shall be the focal point for all project related questions, activities, and issues.

The Consultant shall also designate a Project Manager to be responsible for the successful and timely design and services of all features described herein.

**155 TASK ORDER SCOPE OF WORK AND COST PROPOSAL**

When the Consultant's services are needed, the CM/PM will contact the Consultant to request or coordinate a "Task Order Scope of Work" and a "Request for Cost Proposal" from the Consultant for a determined task. A Task Order Scope of Work may be prepared for each project assigned to the Consultant and will become a supplement to this Scope of Work. The Task Order Scope of Work, in accordance with the original contract, provided to the Consultant can define the project parameters such as project location, desired project completion date, information in the ADOT Five-Year Highway Construction Program, and specific tasks to be performed by the Consultant. Any conflicts between the Task Order Scope of Work and this Scope of Work will be resolved by the CM/PM.

The Consultant shall submit a cost proposal and schedule to the PM within ten working days of receiving guidance on the Task Order Scope of Work for his/her recommendation to the CM/PM. Upon agreement of the negotiated scope, schedule and fees for the Task Order, the Consultant will be notified by ADOT Engineering Consultants Services (ECS) to proceed with the work.

**160 LENGTH OF SERVICES**

The length of services shall be a total of **1095** calendar days from notice to proceed for the base contract, with the Department retaining the option to renew the contract for up to two (2) one-year renewals. No new tasks will be assigned to the Consultant during the renewal time unless waived by the department. As Consultant services are needed for a specific project, a Task Order Length of Service and Notice to Proceed will be issued for that project in compliance with the negotiated scope of services and schedule.

**170 SCHEDULE**

The duration of services for the various projects to be completed under this contract varies from a few weeks to several months depending on the specific Task Order.

The Consultant shall submit a report containing updated project schedules and major project milestones in a format approved by ADOT.

**171 PROJECT SCHEDULE**

An initial schedule compatible to ADOT's Primavera scheduling shall be submitted within 10 working days of the Task Order Notice to Proceed. The proposed schedule shall be compatible to ADOT scheduling procedures. ADOT will provide its scheduling procedures and activity codes to the selected Consultant. The schedule submitted shall be customized to reflect the exact needs and requirements of each project.

**172 PROJECT SCHEDULE UPDATES**

Every four weeks the Consultant shall submit updates to the approved schedule. The schedule shall include a summary of milestones. If any activity show negative float the Consultant shall include a narrative of corrective solutions to put the design schedule back on time for delivery.
Updates shall be provided as per ADOT procedures.

For Local Public Agency projects, the Consultant shall coordinate with the PM and the LPA representative to obtain, from the LPA, a written approval for any change in scope that negatively affects the project schedule or cost.

**173 PROGRESS MEETINGS**

The Consultant shall arrange and attend progress meetings as necessary with the Project Manager and all other designated persons.

The Consultant shall record meeting notes of progress meetings and shall distribute them to the team within five (5) calendar days of the meeting, upon approval by the Project Manager.

**180 RESPONSIBILITY CHART**

For all State projects, the responsibility chart for each project will be included in the Task Order Scope of Work.

For Local Public Agency projects, the Consultant shall coordinate with the PM and the LPA representative to obtain, from the LPA, a list of representatives to be included in the correspondence of the project.

**190 ENVIRONMENTAL DOCUMENTS**

The on-call consultant, if required, will prepare a variety of environmental documents, which may include Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements. All phases of environmental documentation and report preparation will be involved. Document preparation will be in accordance with ADOT Environmental Planning Group technical guidance, the National Environmental Policy Act (NEPA) and the Federal Highway Administration (FHWA) implementing regulations; Environmental Impact and Related Procedures as described by 23CFR771.

The consultant will be responsible for analyses, agency coordination, and report preparation necessary to produce draft and final environmental documents for the project. Environmental documents require the working knowledge of the full range of NEPA impacts such as social, economic, demographic, including secondary and cumulative impacts, Title VI and environmental justice, cultural resources, hazardous materials, wetlands and riparian habitats, threatened and endangered species, air, noise, and water quality; methods used to evaluate these resources and the appropriate measures to mitigate any adverse effects. The consultant must also be able to review draft and final environmental documents, as well as Section 4(f), Section 404 Permits, Section 401 Certification, Section 7 studies, economic and demographic analyses, cultural resources, noise and air quality reports, and hazardous materials.

The consultant may also be responsible for the review, update, completion and/or maintain environmental documents. All work shall be in accordance with applicable federal and state environmental regulations. Upon initiation of the environmental evaluation, the consultant who is responsible for the environmental investigations will contact ADOT's PM and the assigned technical representative(s) of the Environmental Planning Group to discuss the project description, proposed methods, appropriate level of environmental evaluation, anticipated public involvement, coordination with other agencies, report formats, etc.

The consultant must be able to provide a biological evaluation, if required, that meets requirements of, and is acceptable to, the concerned federal and state agencies. Knowledge of wildlife habitats, the state, federal, and tribal listed species, and the Endangered Species Act, are essential.

The Secretary of the Interior's Standards for Rehabilitation will be applied to specific historic preservation rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility. One of the four treatment approach standards must be followed including: Standards for Preservation, Standards for Rehabilitation, Standards for Restoration and Standards for Reconstruction.

All aspects of cultural resource tasks will be carried out using accepted professional archaeological standards and practices consistent with the Secretary of Interior's Standards and Guidance for Archaeological and Historic Preservation (1992). The consultant must coordinate with EPG staff for further guidance on cultural related issues.

The consultant must possess, or have access to, field and laboratory equipment necessary to carry out the work specified in the scope of work.

*Permits and Coordination*

ADOT will assume responsibility for obtaining rights-of-entry, but the consultant shall directly coordinate with administrating agencies for specific entry and permits. The consultant shall hold blanket survey permits from all agencies granting them or indicating an ability to obtain required permission on a project-specific request. While the consultant will interact directly with permit-granting/document-approving agencies, all documents will be reviewed first by ADOT EPG before being submitted to the appropriate agency.

Projects may occur on Arizona State, Arizona Department of Transportation, Bureau of Land Management, Bureau of Reclamation, Forest Service, Indian Reservation, National Park Service, military, and/or private lands. At the time the task order contract begins, the consultant must have the appropriate state and federal permits for conducting threatened and endangered species surveys. The consultant must indicate the ability to expeditiously obtain survey permits from the Bureau of Indian Affairs (Phoenix Area and Window Rock) and individual Tribal Councils, National Park Service, Bureau of Reclamation, and U.S. military, as needed.

*Deliverables*

Field review summary reports, biological evaluations, Section 404 applications, Section 7 reports, and cultural resources survey reports shall be prepared promptly after fieldwork is completed. These reports will follow guidelines established by pertinent federal and state agencies.

The consultant must have the capability to scan all project files/documentation (environmental document, technical reports, memos, letters, notes, maps, emails, etc.) and transfer to CDs. Upon request, the documents are to be burned on the CD as a pdf file using Adobe Acrobat Writer. For consistency and sorting, the CDs should indicate the project information at the top as follows: complete ADOT Project Number (including TRACS number), Federal Project Number, Project Name, Limits of work (Milepost to Milepost or as defined by the Sponsor Agency). The hard copy project files/documentation and the CDs are to be submitted to the EPG immediately after project completion.

The consultant must comply with Government Information Technology Agency (GITA) requirements for geographic information systems (GIS). The requirements include proficiency with ArcView 3.2, providing ADOT with project information in electronic format, and referencing project information to ADOT specifications.

All aspects of these environmental analyses will be carried out using accepted, professional standards and practices consistent with guidelines including: the Council on Environmental Quality NEPA Regulations, the FHWA Technical Advisory T 6640.8A and the Guidelines for Highways on Bureau of Land Management and U.S. Forest Service Lands.

## 200 DESIGN REFERENCES

*Aside of the references in the Dictionary, the consultant must also include the following references:*

A Policy on Design Standards Interstate System (2005); Guide for Review of the AASHTO Controlling Design Criteria on Existing ADOT Roadways (2009); ADOT Guidelines for Scoping Pavement Preservation Projects (Aug., 2011 Rev.); ADOT Project Scoping Document Guidelines (2011), ADOT Regional Freeway System Landscape Value Analysis Report, AASHTO Bicycle Guidelines, Americans with Disabilities Act Accessibility Guidelines (2009), and the Secretary of the Interior's standards for the treatment of Historic Properties. ADOT Erosion and Pollution Control Manual for Highway Design and Construction, ADOT Bridge Hydraulics Guidelines (2007), Local Public Agency Projects Manual (Online).

The Consultant is advised that while possession of all of these documents is not necessary to successfully complete the project, the Consultant is responsible for designing in accordance with the applicable documents, current revisions, amendments and supplements thereto including but not limited to, LPA design standards. Several ADOT Groups/Sections have web sites listing their most current design and policy revisions, which often supersedes their previous published documents. The websites shown in appendix C may be used as a reference, but the appropriate group shall be contacted to confirm the current policy or practice.

All reports, plans and estimates will be prepared in accordance with the appropriate ADOT Standard Plans and Specifications.

## 210 MISCELLANEOUS REPORTS AND STUDIES (AS APPLICABLE)

Miscellaneous reports and studies will be provided as available with each Task Order Scope of Work. These reports may include (if the following exist):

1) As-Built plans
2) Project Plans and Cross Sections
3) Geotechnical Reports
4) Environmental Documents

**220 AASHTO PUBLICATIONS**

ADOT references and publications shall control the work, and necessary supplementation should be provided by appropriate AASHTO, FHWA, and/or LPA references. The ADOT Project Manager will provide guidance and direction.

*ADOT POLICY AND IMPLEMENTATION MEMORANDUM*

ADOT Policy- Project Assessments and Design Concept Reports (Policy 88-2) addressing Preliminary Engineering scoping documents shall be used for developing DCRs, project assessments and scoping letters unless otherwise agreed by the PM. The project Manager and/or representative of Multiplanning Planning Division will provide more guidance.

**300 DESIGN CRITERIA**

Design of the projects to be completed under this contract will be guided by basic design criteria listed in the Task Order Scope of Work developed for each project. These design criteria will serve as the basis for referencing the project design standards and guidelines referenced in Section 200.

For LPA projects, the Consultant may have to provide basic design criteria and prepare the Scope of Work for the segment design. The Consultant shall enter appropriate references from section 200.

**301 SUPPLEMENTAL DESIGN CRITERIA**

The design criteria and the Project Design Guidelines listed in Task Order Scope of Work may be supplemented by, Project Design Memorandums provided by ADOT during the course of the project.

**400 DESIGN WORK PERFORMED BY CONSULTANT**

The Consultant shall be responsible for the design work and preparation of construction documents outlined in the assigned Task Order Scope of Work in accordance with the standard design tasks listed in the Dictionary of Standardized Work Tasks. The Consultant shall perform all work in accordance with the most current policies and procedures, unless otherwise directed.

For LPA projects, the Consultant shall coordinate through ADOT with the appropriate cities and counties during all phases of work. The services may include the tasks of data preparation, data interpretation, and document preparation including scoping documents, reports, contract plans, special provisions and construction estimates; the PS&E shall include design plans, drainage plans, utility relocation plans and traffic control plans, construction staging plans, stormwater pollution prevention plan (SWPPP) and a master design.

The Consultant shall review all material pertaining to its scope to gain an understanding and to identify controls, prior agreements, etc. that may affect subsequent development activities. The Consultant shall assemble a list of significant design issues and proposed resolutions.

Each project to be designed under this contract has specific features, which will be identified, in the Task Order Scope of Work. The Consultant is responsible for the development of design, resolution of issues, and development of construction plans through final PS&E documents of the assigned Task in accordance with the standards, policies and guidelines referenced in Section 200.

**403 SCOPING DOCUMENTS**

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any required scoping documents.

The scoping document is a preliminary engineering report, which describes the scope of work for a project and identifies the impacts the project will have on ADOT's resources, the public, other agencies, and the environment. A scoping document is the result of the initial activity associated with the development of a highway project. The project does not need to be listed in the current ADOT Five-Year Highway Construction Program.

Preparation of a scoping document involves a team process wherein the different groups and sections of ADOT along with other involved parties of a project (both internal and external to ADOT) reach a consensus concerning a project's scope and cost.

The scoping document shall include discussion of the need for the project, what the issues are, what is the goal, and the criteria for determining if the project meets the goals, alternative solutions, and a recommended solution with cost estimate.

For LPA projects, the Consultant shall be responsible for coordinating all necessary interim pre-design activities for the projects. These activities include processing, and making recommendations for, coordinating with local jurisdictions, developers and utility companies to assure compatibility with ongoing local developments. Scoping Documents will be submitted to Roadway Engineering Group for review.

**404 SUPPLEMENTAL REPORTS AND DOCUMENTS**

The Consultant may be required to prepare additional reports or documents as supplements to an assigned scoping document. Such reports may include Surveys, Traffic Studies, Drainage Studies, Material Reports, etc. The reports shall satisfy the requirements of the responsible Section.

**405 AASHTO DESIGN CRITERIA REPORT and DESIGN EXCEPTIONS**

The need for detailed AASHTO design criteria will be determined on a project basis for this contract. The Task Order Scope of Work for each project will clarify the need and assignment or responsibility for preparation of any required AASHTO reports.

Design Variances and Design Exceptions are required for utilization of design values that do not meet the design requirements prescribed in the Roadway Design Guidelines and AASHTO Green Book. Refer to the "Design Exception and Design Variance Process Guide, December 14, 2009.

Any changes to the design criteria which result in the need for a design exception shall be submitted to the Roadway Engineering Group for approval. The request shall describe the deficiencies and the justification for the design exception. The report shall be developed consistent with the Design Exception and Design Variance Process Guide that can be found in the Roadway Design Section website under Roadway Design Standards and Guidelines. The request shall be submitted a minimum of fifteen (15) calendar days prior to the Stage II design submittal, or during scoping as directed by the ADOT PM.

If a project is on an NHS Highway, ADOT Roadway Group shall request a Design Exception approval from the Federal Highway Administration (FHWA) Division Administrator. The Consultant shall prepare a letter to the FHWA Division Administrator requesting Design Exception approval for each non-conforming feature which will not be upgraded as part of the project; all supporting reasons for the design exceptions shall be described and explained. The consultant shall refer to the FHWA's "Mitigation Strategies for Design Exceptions (July 2007)". The letter shall be submitted to the PM for review and forwarding to the State Engineer Roadway Group for concurrence.

**410 SURVEYS AND MAPPING**

The North American Datum of 1983 with minor revisions in 1992 (NAD 83/92) shall be used for horizontal control, and the North American Vertical Datum of 1988 (NAVD 88) for vertical control. All work will be performed under the direction of an Arizona Registered Land Surveyor. In addition, surveys under this contract shall follow the specifications and be guided by the basic survey criteria listed below.

When applicable, all surveys shall be made by Real Time Kinematic (RTK) methods using the Global Positioning System (GPS) technologies significantly tied to State Plane Coordinates as published by the National Geodetic Survey (NGS) unless prior agreements are made. Verification of the existing control is required prior to the production of survey data. Densification of control may be needed in areas where the control is scarce. This can be achieved through the implementation of static GPS sessions. In areas where GPS signals cannot be obtained, conventional methods such as the use of total stations may be needed.

The Consultant may provide ground control, location of existing topographic features, and/or the creation of electronic files for supporting photogrammetric or location surveys. Contract activities may include: ground control setup, paneling, panel coordinate surveys, locating section corners, locating right-of-way markers, locating grade breaks, and other map worthy features as dictated by project needs. The survey data could be used to generate Digital Terrain Models (DTMs), "Best Fit" alignments, and/or the creation of electronic files used to graphically display the collected information according to ADOT Computer Aided Drafting and Design (CADD) standards.

If applicable, the Consultant shall review photogrammetric survey data and mapping provided by ADOT for completeness. The Consultant shall notify the Project Manager if additional survey is required. If so, directed by ADOT, the Consultant shall conduct supplemental surveys to obtain the information necessary to complete the project. The required surveys will be identified in the Task Order Scope of Work. Any supplemental surveys shall be performed in accordance with Section 410 and 411 of the Dictionary of Standardized Work Tasks.

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for delineation of the existing R/W and preparation of the record of survey in accordance with Section 410 of the Dictionary of Standardized Work Tasks.

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for flagging the project centerline or R/W.

For LPA projects, the Consultant may have to provide base mapping by producing field surveys for location of existing right-of-way, topographic surveys, drainage surveys and utility locations. Any field surveys required shall be suitable for contract documents preparation and meet the technical requirements of ADOT and the State Board of Technical Registration.

*CONTROL SURVEY REQUIREMENTS*

STANDARD ACCURACY SPECIFICATIONS FOR CONTROL SURVEYS

The following requirements will be followed in accordance with the "Standard Accuracy Specifications for Control Surveys" specified below:

| | | |
|---|---|---|
| 1. | Maximum closing error in position after angular adjustment (ratio) | 1:50,000 |
| 2. | Maximum total angular error per closed traverse (sec) | $3\sqrt{N}$[1] |
| 3. | Maximum elevation closing error (ft) | $0.035\ \sqrt{M}$ |

[1] N=Number of angle stations

A. HORIZONTAL CONTROL:

All Surveys shall be accurately adjusted for closure according to the surveying methodology used. ADOT will only accept surveys that meet or exceed the specified accuracies. It shall be the sole responsibility of the Consultant to ensure (i.e. provide ties to existing monuments) and demonstrate to ADOT's satisfaction that the specified accuracies have been met or exceeded. The initial and final stations of each traverse shall be an existing station recognized and published as a First or Second Order, or higher, horizontal monuments by the NGS. Both the initial and final stations shall be verified for position by observing and recording the coordinates of the First or Second Order, or higher, stations and measuring the relative differences between them and the recorded values.

B. VERTICAL CONTROL:

Vertical positions shall be established on all horizontal controls and shall be considered as Bench Marks (BMs). Additional BMs shall be established along the traverse route so that the BM spacing shall not exceed one (1) mile. BM Level Lines shall originate on at least two (2) existing BMs agreeing within the limits of these specifications. The two (2) originating and the two (2) terminal BMs must be recognized and published as First or Second Order, or higher, vertical monuments by the NGS. The missed closure of unadjusted level data for BM Leveling shall not exceed the limits as specified in the "Standard Accuracy Specifications for Control Surveys".

Electronic files may consist of the following items:

a) Microstation (.DGN) file(s) containing map worthy features (i.e. vegetation, roads, buildings, washes, utilities, contours, etc.) within the project limits.

b) Microstation (.3D) file(s) containing graphic features (i.e. breaklines, random points, and boundary lines) used to produce the DTM.

c) Microstation In Roads/Site Survey Select (.DTM) file(s) containing electronic data used to approximate a three (3) dimensional surface.

d) Microstation In Roads/Site Survey Select (.ALG) file(s) and (.RPT) file(s) containing electronic data used to produce a horizontal "Best Fit" alignment including a basis of stationing and/or horizontal control.

e) ASCII (.CSV) file(s) containing discreet points collected by surveyors under the supervision of an Arizona Registered Land Surveyor. The following ASCII files may be provided to ADOT as a deliverable:

1) Project Control and/or Aerial Panel Points
2) Section Corners
3) Property Corners
4) Right-of-Way Monuments
5) Structure Files
6) Edge of Pavement Files
7) Mile Post Markers
8) Centerline and Driving Stripes
9) Any other features as requested

f) Scanned Images, Aerial Photographs, and USGS Quadrangle Maps used for planning, collecting, or processing of the Consultant's data.

**415 MATERIALS DESIGN**

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any required Material design.

For LPA projects, if required, the Consultant may prepare the Materials Design Report for each project, to establish guidelines and criteria based on sampling and testing. In general, the designer will develop the final Materials Design Report. A consultant with local geotechnical experience is preferred to perform Geotechnical work. Materials Reports for LPA projects should follow the Arizona Department of Transportation Local Public Agency Projects Manual, Chapter 12: Materials Report Clearances.

**416 GEOTECHNICAL INVESTIGATION**

Geotechnical requirements for the individual projects may be provided by ADOT. If desired, ADOT will task the consultant with a geotechnical investigation for a project; the objective of the investigation is to identify and locate both horizontally and vertically significant soil and rock types and ground water conditions present and to establish the characteristics of the subsurface materials by sampling and laboratory or in-situ testing.

The Consultant shall work continuously so as to complete all services within 45 calendar days after starting work. This allowable time may be changed on project by project basis, depending on the scope of services; the time will be stated in the notification if it is not 45 days. The work shall be carried out uninterrupted to completion.

Extensions of time may be allowed for adverse ground or weather conditions at the discretion of the Geotechnical Operations Engineer and Project Manager. The Department will make no payment for equipment downtime except as noted in the Pay Items for soil borings and test pits.

If required, a Consultant shall prepare Geotechnical Report to identify any known or potential hazardous waste sites or other man-made fills in the corridor; to summarize the results of all data and present recommendations for earthwork factors (shrink and swell), cut and fill slope rates/stability, geologic unit locations (rock blasting, etc.), suitability for embankment and/or aggregate, earth retention structures, structure foundations, and roadway. If an earth retaining structure will be used, the Consultant shall prepare a Retaining Wall Selection Report according to current ADOT Intermodal Transportation Division (ITD) Retaining Wall Policy.

For LPA projects, if required, the Consultant may prepare a preliminary and final Geotechnical Report for each project; it is recommended that a consultant with local geotechnical experience perform Geotechnical work. The Geotechnical Report shall be prepared to identify any known or potential hazardous waste sites or other man-made fills in the corridor; to summarize the results of all the data, and present recommendations for earthwork factors (shrink and swell); cut and fill slope rates/stability, geologic unit locations (rock blasting, etc.), suitability for embankment and/or aggregate, earth retention structures, structure foundations, and roadway.

The Consultant shall meet with representatives of the ADOT PM and Materials Group to determine the geotechnical investigation, design and reporting requirements for each project. Any supplemental geotechnical work shall be performed in accordance with section 416 through 418 of the Dictionary of Standardized Work Tasks.

**417 Earthwork**

If necessary, the Consultant shall attempt to achieve an approximate earthwork balance for projects and corridors consistent with good engineering practice based upon the type of material and with consideration given to environmental mitigation measures unless otherwise directed.

**419 PAVEMENT DESIGN**

If requested, the consultant will provide the final Pavement Design for a project. For most State projects ADOT Pavement Design Section will provide the design.

When the Consultant is requested to provide the Pavement Design for a project, the Pavement Design shall be in accordance with section 419 of the Dictionary of Standardized Work Tasks.

**420 ENVIRONMENTAL STUDIES**

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any environmental studies and document preparation.

For LPA projects, the Consultant may be required to develop or update environmental studies as part of this contract. The Consultant shall meet with the Local Public Agency, ADOT PM and Environmental Planning Group to determine the environmental studies required for the project.

The consultant shall be responsible for incorporating any mitigation measures that are mentioned in the Final Environmental document into the design of the project. Activities that require soil and/or vegetation disturbance such as Geotechnical investigations, surveys, etc. may not begin until the appropriate environmental clearance (i.e., cultural resources, hazardous materials, or biological evaluations) is issued. The project's environmental footprint shall consider all utility relocation, staging areas, TCEs, drainage easements and other areas that may impact the work required for the project. ADOT in coordination with the affected federal, state and local agencies and jurisdictions will issue the required clearance.

**422 Noise Analysis Technical Report**

For all projects where noise analysis is determined to be necessary, the Consultant may be required to provide technical information/report on the project to ADOT. The Consultant shall meet with the ADOT PM and the Environmental Planning Group representative to determine the noise analysis requirements and need of an air quality technical report for the project/corridor.

For LPA projects, the Local Public Agency representative shall also be included to discuss the need and requirements. The Consultant shall meet with ADOT PM and EPG to obtain further guidance for each project.

**423 Hazardous Materials Survey**

For projects where hazardous materials survey is determined to be necessary, the Consultant shall provide required technical information on the project to ADOT. For LPA projects, the Consultant shall meet with the Local Public Agency representative, ADOT PM and Environmental Planning Group to determine the hazardous materials surveys requirements for the project.

**424 Archeological Testing and Recovery**

If archeological testing and recovery is determined to be necessary, the Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any environmental testing and recovery.

For LPA projects where archaeological testing and recovery is determined to be necessary, the Consultant shall provide required technical information on the project to ADOT. The Consultant shall meet with the Local Public Agency representative, ADOT PM

and Environmental Planning Group Historic Preservation Team (HPT) to determine archeological testing and recovery requirements for the project.

**426 Public Information meetings and hearings**

For most projects, ADOT will be responsible for the development of a public involvement plan that identifies the number, purpose, and schedule of public information meetings and Public Hearings required for a project. The Consultant may be required to support ADOT in the execution of the public involvement plan.

In the event the consultant is directed to conduct the public involvement activity, the consultant shall provide services for professional public involvement to, but not limited to: conduct public hearings; public meetings; scoping sessions; develop supporting graphics; visual displays; ads and written materials; supply audio and display equipment; provide materials in Spanish (if required); arrange for Native American interpreter (if required); provide for American with disabilities Act (if needed ie., sign language, Braille).

Section 425 of the Dictionary of Standardized Work Tasks further defines the Consultants responsibility in this regard. The Task Order Scope of Work will define the requirements for each individual project.

For LPA projects, the Consultant must coordinate with the ADOT PM/Communications representative and the LPA representative to define the expected responsibilities.

**430 UTILITIES AND RAILROAD**

For State projects, the Consultant may be required to communicate and coordinate with utility companies, obtain as-built information, indicate existing utilities and planned relocations on construction plans, determine and resolve utility conflicts, and prepare utility special provisions and clearance.

For LPA projects, the Consultant may be required to obtain available utility mapping and identify utilities within the general project limits. The Consultant shall identify potential utility conflicts, suggested relocations, implementation timing and costs and incorporate these into a relocation plan.

The Consultant may also coordinate with, as necessary, and inform the utility companies of the permits and licenses required by ADOT and other agencies necessary to complete the utility relocations. Potholing may be needed for a specific task.

The Consultant may coordinate with the PM, including the LPA representative if the project is sponsored by a LPA, and the U&RR representative to obtain further guidance for a specific task. If potholing is necessary in a project, the consultant shall follow appendix E for guidance.

For projects involving ITS, the consultant shall submit confirmation to the ADOT U&RR that electrical power load center addresses are accepted by the appropriate agency (ies).

**440 Roadway Design**

The Consultant may be required to prepare plans and documents for construction of the roadway improvements in accordance with Section 440 of the Dictionary of Standardized Work Tasks and/or the Task Order Scope of Work. Project Task Orders may range from singular tasks or activities with short duration and low complexity, to multidiscipline tasks with long durations and high complexity.

For LPA projects, the Consultant may be required to prepare plans for all roadway elements and improvements as well as detour construction and removal.

Knowledge of ADOT's project development process, Federal and State requirements and other stakeholders' requirements within the projects area of influence, are extremely important.

The result of the design shall include but not necessarily be limited to:

- Typical roadway sections

- Plans and profiles
- Roadway cross sections
- Summary sheets
- Details

**441 Scoping Documents, (Predesign) Report and Data Requirements**

Scoping documents required shall be identified by the ADOT Project Manager for the individual Task Order. A majority of Preliminary Engineering design projects involve but are not limited to Project Assessments or Scoping Letters.

All reports developed by the Consultant shall conform to specific formats and include certain data identified by the ADOT PM. In general, Scoping Letters and Project Assessments (see A below) shall conform to ADOT Policy and Implementation Memorandum 88-2, and Design Concept Reports (see B below) shall conform to ADOT Policy and Implementation Memorandum 89-5 unless otherwise stated by the PM. Report format and content shall be as outlined in the Predesign Project Scoping Document Guidelines. The Guidelines are available on the Predesign website:

http://www.azdot.gov/business/engineering-and-construction/roadway-engineering/roadway-predesign-and-review

The Consultant shall request the ADOT PM to resolve any conflicts between the Memorandums, Scope of Work, Templates, or Example Reports. The ADOT PM shall review all reports at different stages of completion and, if directed, the Consultant shall revise the reports to bring them into conformance with the formats and data requirements specified. Revisions of this nature will be considered by the ADOT PM to be part of the scope of work for the assigned project, and additional compensation will not be paid for this type of work. It is the responsibility of the Consultant to conform to the formats in force at the time and include all applicable data specified in this scope and the references.

A. Project Assessment (PA) and Scoping Letter (SL)

A PA is a preliminary engineering report that describes the scope of work for a project, and identifies the impacts the project will have on ADOT's Resources, the public, other government agencies, and the environment. A PA is the result of the initial activity associated with the development of a highway project proposed by ADOT. The project may or may not be listed in the current ADOT Five-Year Transportation Facilities Construction Program or COG/MPO Capital Improvement Program.

Preparation of a PA invokes a team process wherein the different groups and sections of ADOT along with the other involved parties of a project (both internal and external to ADOT) reach a consensus concerning a project's scope, schedule and cost.

SL's are similar to PA's but for simplified projects. No Summary of Comments is prepared with a SL. The consultant shall submit to ADOT for review and approval the basic design criteria that will be used in the development of the project prior to the development of scoping documents or design documents.

B. A Design Concept Report (DCR) shall include but is not limited to the following:

*a) Initial Design Concept Report:*

The Consultant will present the proposed design criteria, any alternatives (either new or as previously scoped), typical sections, etc. within the study limits for review and approval by ADOT. The Consultant's recommendations will be supported by their own research, identified environmental issues, site visit(s), community input, initial AASHTO analysis, conceptual drainage analysis, design criteria, initial traffic analysis, utility and right-of-way information of record, etc.

The alternatives developed and approved for further study shall be expanded upon, incorporating any comments from team members. Each subject shall be addressed in sufficient detail to clearly document the design concepts, and justify the recommendations and the alternative considerations. Coordination with adjacent landowners and local jurisdictions shall be an important part of fulfilling the requirements of the study. Selection of the recommended alternative shall be consistent with and supported by the environmental documentation. It is anticipated that several alternatives including the no-build alternative will be evaluated in association with the DCR.

Agency and Public Scoping Meetings will be held in the project vicinity to explain the project and solicit comments from the public and interested organizations on the relevant issues in the corridor and possible alternatives under consideration. These meetings will be documented in the Initial Design Concept Report.

*b) Draft Environmental Document*

The Consultant shall prepare a draft environmental document (NEPA) concurrent with the preparation of the Design Concept Report. This document will describe the impacts, if any, of the recommended action and the necessary mitigation measures.

*c) Final Design Concept Report:*

The Consultant will respond to written comments from the review of the Initial Design Concept Report by issuing a Summary of Comments. The Consultant shall submit the Final Design Concept Report, sealed by an Arizona Registered Professional Engineer, at the completion of this study. The reports shall include refinements of the materials developed since the Initial Design Concept Report and revisions resulting from the project comment process. Itemized estimates shall use ADOT's Estimated Engineering Construction Cost program (E2C2) or similar. The Final Design Concept Report may cover up to 30% (Stage II) design.

*d) Final Environmental Document:*

The Consultant shall prepare a final environmental document concurrent with the preparation of the Final Design Concept Report. This document will incorporate a description of the public involvement process and the responses to the comments received, along with discussion of changes to the draft environmental documentation.

The Consultant must coordinate the required task with the ADOT Project Manager and/or representative of Multiplanning Planning Division to obtain more guidance. For LPA projects, the Consultant shall coordinate with the ADOT PM, LPA Section representative and the LPA representative.

**445 Drainage Design**

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any drainage design work. Drainage design shall be performed in accordance with section 445 to 447 of Dictionary of Standardized Work Tasks.

If applicable, for LPA projects the Consultant shall prepare a comprehensive drainage plan. The plan shall include final sizing and location of detention basins, offsite collection culverts, channels and other major drainage structures as well as tentative onsite collection system layout and sizing.

**450 Landscape Architectural Design and Erosion Control**

It is anticipated that ADOT will be responsible for the roadside landscape architectural design on projects. The Task Order Scope of Work will clarify the requirements and responsibilities for Landscape Design for each individual project.

For LPA projects, the Consultant may be responsible for the preparation of the temporary and permanent erosion control plans, specifications and estimates, and SWPPP in accordance with ADOT specifications.

**451 Aesthetics**

The Consultant may need to formulate aesthetic treatment guidelines of structural element options in terms of cost effectiveness and continuity, and make recommendations on each project for the following:

- Bridge abutment and columns
- Retaining walls
- Noise walls
- Barriers
- Pedestrian overpasses
- Slope paving

## 455 BRIDGE DESIGN

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any structural elements. Structural design shall be performed in accordance with Section 455 of Dictionary of Standardized Work Tasks or as noted in the Task Order Scope of Work.

During scoping, the Consultant will determine the need for new or reconstructed structures on the project and shall recommend alternative structures and superstructure depths to the extent necessary for development of roadway concepts. Identifying the need for new or replaced structures is required for preliminary cost comparisons and is part of the study. The Consultant shall be fully knowledgeable of bridge types and structural requirements for railroads, traffic interchanges, water crossings, wildlife crossings and walls. The Final DCR will require an Initial Bridge Study Report.

## 456 Bridge Structure Selection Report

For all projects, the Consultant may need to submit an Initial Bridge Selection Report for new bridges and/or for renovation of existing bridges. For State projects, the subsequent designer (In-House or Consultant) will be responsible for the Final Bridge Selection Report.

For LPA projects, the Consultant shall submit the Final Bridge Selection Report as well as the design of the proposed new bridge(s) and/or the renovation of existing bridge(s).

## 458 Bridge Inspections

The Consultant may be required to include the following services, but are not limited to: detailed (in-depth, fracture critical, underwater, damage, etc.) inspection, safety (routine) inspection, emergency bridge inspection, special inspection, scour evaluations, scour plan of action, development and implementation of traffic control plans where required, design of bridge repair projects and bridge load rating.

The Consultant shall review the list of bridge(s) included in a task order. Based on the nature of the service requested and on the particulars of each bridge included in the list, the Consultant shall prepare a detailed schedule. Bridges shall be inspected during the same month as previous inspection unless the Department requests that the inspection be performed earlier for the purpose of changing inspection cycle or to catch up on delinquent inspections.

The Consultant shall obtain all the necessary permits from the bridge owner agency to be able to provide inspection services within the bridge owner's right-of-way.

The Consultant shall refer to appendix D for further inspection instructions.

*RESPONSIBILITIES*

A. The Consultant shall be responsible for, but not limited to:

1. Submit a list of Team Leaders(*) to ADOT PM/Bridge Group (BG) representative for approval.

2. Inspection of all the structures included in the task order list.

3. Adherence to the inspection schedule agreed to by the Consultant, the Project Manager and the BG representative.

4. Notifying the Department District Maintenance Organizations and seeking their approval, of any traffic control requirements by the Consultant prior to the installation of the control. Also, any traffic control plans developed by the Consultant shall be approved by ADOT Traffic Group or the Regional Traffic Engineer. The copies of approved plans developed for each bridge shall be submitted to the ADOT Bridge Group with bridge inspection report documents.

5. Prepare and submit bridge inspection documents in accordance with the ADOT Bridge Inspection Guidelines.

6. Provide bridge load rating analysis if requested.

7. Provide bridge scour evaluation and scour plan of action if requested.

8. Develop a Bridge Inspection Quality Control/Quality Assurance (QC/QA) Program following the FHWA recommended framework and ADOT Bridge Inspection Guidelines Quality Assurance and Control.

B. ADOT Bridge Group shall:

1. Provide the Department's bridge inspection software, Arizona Bridge Information Storage System (ABISS). It is recommended for the Consultant's computer to be able to run Microsoft Windows XP for an operating system, Microsoft Office 2003 or earlier and must have a CD/DVD drive. If the Department changes the Bridge Inspection Software during the duration of this contract, the Consultant shall be required to purchase the new Software and other required hardware at their own expense. Consultant will also be responsible for installation and maintenance of new Bridge Inspection Software.

2. Provide a copy of the available structures plans, vertical clearance or channel profile diagrams, fracture critical members in-depth inspection plan as applicable.

3. Maintain list of approved Team Leaders* allowed to work within Arizona.

(*) FHWA Team Leader qualifications are spelled out in Code of Federal Regulations 23 CFR 309.b. The Consultant shall submit to the Department a list of Team Leaders that shall include all required training, registrations, and experience of each proposed person. If the Team Leader will be performing under water inspections, that information will be required as well. Only Team Leaders on the approved list may perform inspections.

Note: The Inspection Team Leader is a Registered Professional Engineer (in Arizona) and must have a minimum of five (5) years' experience in bridge inspection assignments in a responsible capacity; must have successfully completed FHWA-NHI training course "Safety Inspection of In-Service Bridges", Course No. 130055 or equivalent training that is acceptable to FHWA.

**460 TRAFFIC ENGINEERING DESIGN**

The Consultant may be asked to provide services, but not limited to: the preparation of pavement marking plans, traffic control plans, signing plans and traffic signal plans to support pavement preservation projects, safety projects, bridge widening projects, or similar projects.

In addition, the Consultant may be required to: Support of the Highway Safety Improvement Program (HSIP), LPAs and tribal government transportation system that may be analyzed for safety enhancement in accordance with Federal guidelines and requirements.

The Road Safety Assessment (RSA) Program conducts safety assessments throughout Arizona. High Risk Rural Roads Program (HRRRP) provides set aside funds for construction and operational improvements on high risk rural roads.

The Consultant shall be capable of producing the following traffic engineering products:

1. Pavement Marking Plans
2. Traffic Control Plans
3. Signing Plans
4. Traffic Signal Plans
5. Electrical Distribution and Control Circuit Plans
6. Highway Lighting and Sign Lighting Plans
7. Collection and Analysis of Traffic Engineering Field Data
8. Traffic Impact Studies
9. Traffic Operations and Safety Evaluations
10. Preparation or Revisions of Standards, Specifications, Special Provisions, Guidelines, Procedures and Manuals
11. Development of Design and Operating Guides and Training Manual

12. Traffic Analysis
13. Special Projects
14. Drafting Services using Microstation CADD software

The Consultant shall coordinate with the ADOT PM and Traffic Project Leader (PL) for further clarification of the Task Scope of Work.

Traffic Analysis

Prepare planning, design or operational traffic analysis. Collect and compile all traffic volume data- present and future ADTs and DDHVs. Perform Capacity Analysis of freeways, two and multilane highways, signalized and unsignalized intersections, as well as roundabouts. Perform traffic signal timing optimization plans of isolated intersections, corridors and interchanges. Prepare a written report with recommendations and technical appendices.

Traffic Signal Plans, Electrical Distribution and Control Circuit Plans

1. Prepare geometric plans.
2. Arrange for electric service with appropriate utility company and verify with them if service relocation is required.
3. Prepare preliminary plans using recommendations from the Traffic Signal Study and discuss these with the PM and/or PL.
4. Review the plans with the PM and/or PL at approximate the 60%, 95% and 100% completion level.
5. Prepare the electrical service request letter to accompany 60% submittal.
6. Review material submittals and prepare response letters.

Highway Lighting and Sign Lighting Plans

1. Meet with an ADOT PM and/or PL to review specific lighting needs for the specific project.
2. Prepare geometric plans that include existing or new roadway and bridge structures, pole schedules, conduit and conductor schedules, pole and fixture details, and necessary general construction notes.
3. Prepare a complete special provision package that addresses all lighting issues not covered by the standard specifications.
4. Prepare a lighting design report that establishes the lighting criteria used by the designer expressed in a brief narrative. Lighting equipment type, locations and mounting heights. Include IES files and roadway plans with lighting calculation indicating light level contour lines on the traveled way.
5. Prepare preliminary lighting plans based on AASHTO lighting guidelines and lighting calculations. Lighting calculations shall be made with Visual, Aladdin, or Micro Site Lite software. Other lighting software may be used when approved by Traffic Engineering. Light poles must have station, offset, pole and circuit number callout.
6. Prepare and submit voltage drop and conduit fill calculations.

Collection and Analysis of Engineering Field Data

1. Conduct initial field visit with Traffic Engineering personnel if required due to nature of project. Determine equipment needs and assign personnel to gather appropriate field data.
2. Summarize and/or analyze data using appropriate software or manual techniques to insure completeness and accuracy.
3. Submit results in suitable format for review by monitor and other Traffic Engineering personnel.

Traffic Impact Studies

1. Review project site and surrounding area with Traffic Engineering personnel, Regional Traffic personnel, and other appropriate personnel.
2. Gather additional information and traffic engineering field data from appropriate sources if required.

Traffic Operations and Safety Evaluations

1. Review project site with the PM and/or PL, Regional Traffic personnel, and other appropriate personnel, and make video tape of roadway in both directions including approach roadway on each end of limits of project as required.
2. Check appropriate traffic data sources (Traffic Studies, TPG, etc.) for existing data that may be usable for analysis.
3. Gather any traffic engineering field data necessary for the analysis.
4. Perform analysis. Inform/advise monitor of unusual findings, analysis techniques, and changes, including software packages used, if appropriate, and any other changes contrary to expected results.
5. Submit preliminary report, complete with appropriate maps, drawings, and background information, for review by Traffic Engineering and other ADOT personnel.
6. Participate in consensus meeting/present findings to Traffic Engineering and other appropriate personnel.
7. Submit final report and be available to answer any questions that might arise.

Roundabouts

1. Prepare conceptual roundabout drawings, working with Roadway group to determine geometrics, lane configurations and usage, signing, lighting and pavement markings, etc.
2. Discuss drawings with the PL.
3. Coordinate with District and Project Manager, as necessary.
4. Prepare preliminary plans. Provide three sets of half-size drawings to the PL.
5. Review and address comments.
6. Prepare final plans. Provide three sets of half-size drawings to the PL.

Traffic Safety

The work required for Road Safety Assessment Program (RSA) and for High Risk Rural Roads Program (HRRRP) projects may include the following:

1. Projects may include but are not limited to: Intersection improvements, auxiliary lanes, traffic signals, roadway illumination, roundabouts and signing and striping.
2. Provide team members conducting Road Safety Assessments (RSAs).
3. Design High Risk Rural Road Program's (HRRRP) projects.
4. Provide project manager(s) for the HRRRP's projects.

*Deliverables:*

Upon Final Design Approval for all work that involves Traffic Engineering/Design, the Traffic Engineering Group requires that the following CADD related deliverables be submitted to the Project Manager. In addition, a copy of the Letter of Transmittal indicating all Traffic related deliverables have been submitted to ADOT shall be forwarded to the Traffic Engineering Project Leader for approval.

1. All Design files associated with Traffic Design, including Traffic Signal, Signing, Pavement Marking, Traffic Control, Pre-Design, HES Projects, and Permit Designs, shall be submitted in ADOT's current version of MicroStation 2D format (.DGN)(2D) or similar.
2. All sign designs/formats shall be submitted in ADOT's current version of sign design software (.sgn).
3. All sign summary Excel spreadsheets used to import sign summary data into MicroStation shall be submitted in ADOT's current version of Excel (.xls) or similar.

**462 TRAFFIC CONTROL PLANS**

The Consultant may be required, but is not limited to:

1. Prepare conceptual traffic control drawings, including geometrics, lane configurations, structures, other physical features, existing signs and pavement markings, etc.
2. Discuss drawings with the ADOT Project Leader.

**464 SIGNING PLANS**

The Consultant may be required, but is not limited to:

*Freeway Signing:*

1. Prepare a signing concept showing the locations and legend of all existing signs.
2. Discuss the signing concept with the PL.
3. Prepare initial signing plans, including formats.
4. Prepare preliminary plans showing sign format sheets, sign summary sheets and sign structure elevations as required. Provide three sets of half-size drawings to the PL.
5. Review the comments with the PL.
6. Prepare final plans, sign format sheets, sign structure elevations, and sign summary sheets, as required. Provide three sets of half-size drawings (one for PL plus two extra copies).
7. After sign staking, review and address comments with PL.
8. Prepare one full-size, stamped and sealed set of vellums. Provide it and two half-size copies of it to the PL or ADOT office designated by the PL.
9. Prepare Department Furnished Materials letter, if necessary.

*Non-Freeway Signing:*

1. Inventory existing signing, including signs within a 1/4 mile of each end of the project.
2. Prepare conceptual signing sketches, including existing pavement markings, lane configurations, turn lanes, tapers, other geometric factors, etc.
3. Discuss sketches with the PL.
4. Prepare the preliminary plans showing sign format sheets and sign structure elevations, as required. Provide three sets of half-size drawings to the PL.
5. Review the comments of the preliminary plans with the PL.
6. Prepare final plans showing format sheets, sign structure elevations, and summaries, as required. Provide three sets of half-size drawings (one for PL plus two extra copies).
7. Review the final plan comments with the PL.
8. Prepare one full-size, stamped and sealed set of vellums. Provide it and two half-size copies of it to the PL or ADOT office designated by the PL.

**465 PAVEMENT MARKING PLANS**

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for any Pavement Marking Plans. Pavement Marking plans shall be prepared in accordance with Section 465 of Dictionary of Standardized Work Tasks or as noted in the Task Scope of Work.

The Consultant shall, but is not limited to:

1. Inventory existing pavement markings, including those within 1/4 mile of each end of project.
2. Prepare conceptual pavement marking sketches, including any adjustments to the existing pavement markings, considering lane configurations, turn lanes, tapers, other geometric factors, delineators, no-passing zones, roundabouts etc.
3. Discuss sketches with the Project Leader (PL).
4. Prepare preliminary plans. Provide three sets of half-size drawings to the PL for each submittal.
5. Review and address comments with the PL.
6. Prepare final plans. Provide three sets of half-size drawings to the PL.
7. Review and address comments with the PL.
8. Prepare and submit one full-size, stamped and sealed set of vellums; provide the set and two half-size copies of it to the PL or ADOT office designated by the PL.
9. Prepare drafts of findings in the public interest for items such as sole source materials, if necessary.

**466 INTELLIGENT TRANSPORTATION SYSTEMS**

If required in the Task Order Scope of Work, the selected consultants must be capable of providing some or all, but is not limited to, the following ITS engineering and technical functions to support design and research requirements:

- Traffic Management System
- Freeway Management System
- Real-time traffic monitoring and control system
- Dynamic Message Signs (DMS) System
- Closed-circuit television (CCTV) monitoring system
- Traffic Interchange Signal System
- Ramp Metering System
- Ramp Management System
- Communications System
- Road Weather Information System (RWIS)
- Vehicle Detection System
- Traffic Operations Center
- Before-and-After Studies
- Performance Measures
- Travel Time Information
- Research, Evaluation, and Operational Strategies
- System Integration
- Fiber Management
- Standard Drawings
- ITS Architecture
- Electrical Engineering Communications

*SUBMITTALS*

The Consultant may be required to provide the following information during the different stages:

A. The Stage I document of the project shall detail the scope of the project including the cost estimate. The scoping document should reference how the project fits into the Freeway Management System Master Communications Plan. This initial submittal shall identify stakeholders, Joint Project Agreements (JPAs) needed, Utilities involvement and support disciplines needed including Environmental.

   Stage I will also include the Intelligent Transportation Systems (ITS) Projects Systems Engineering and Architecture Compliance (CFR 23-940.11, Project Implementation).

B. Stage III Documents, 60% Design, the project plans shall include an overview page with all devices summarized in one page. Plans shall include charts for pull boxes and devices with grid space of Global Positioning System (GPS) coordinates. All Freeway Management Systems (FMS) devices shall have both stationing and GPS coordinates.

The special provisions shall cover all FMS devices within the project, including but not limited to, cabinets, controllers, loops, CCTV cameras, cable types, communications system, and testing. The consultant shall ensure that the special provisions are project specific.

*QUALITY OF PROJECT DOCUMENTS*

The consultant may be required to:

a. Determine applicability of computer software and equipment used.

b. Determine if the standards and specifications are sufficiently comprehensive.

c. The consultant shall be able to include an update node diagrams for the Freeway Management System Communications Master Plan as well as update a fiber management software.

**470 RIGHT-OF-WAY**

As per section 470 of the Dictionary of Standardized Work Tasks or as noted in the Task Scope of Work. The consultant shall coordinate with the PM and the Right of Way representative to ensure compliance with federal guidelines.

For LPA projects, the Consultant may be requested to develop and prepare R/W plans.

**472 RIGHT-OF-WAY ACQUISITION**

If required by the Task Order, the Consultant shall determine the requirements for additional right-of-way. A preliminary identification of R/W shall be made with the Stage II submittal. ADOT will process acquisition of right-of-way. The R/W information shall be conveyed to ADOT in accordance with Section 471 and 472 of Dictionary of Standardized Work Tasks or as noted in the Task Scope of Work.

For LPA projects, the Consultant may be requested to aid in the acquisition of additional right-of-way. The consultant shall coordinate with the PM and the Right of Way representative to ensure compliance with federal guidelines.

**480 Cost Estimates**

The Consultant shall prepare combined and detailed estimates for the assigned task. Cost Estimates shall be prepared in accordance with Section 480 of Dictionary of Standardized Work Tasks.

The Consultant shall identify options to maintain the project within budget, including revising criteria, or phasing changes.

**485 Specifications**

The Consultant shall identify critical elements of construction for each project assigned.

**486 Special Provisions**

For the assigned task, the Consultant shall prepare draft Special Provisions for items, details, and procedures not adequately covered by ADOT's Standard Specifications and Stored Specifications.

**487 Contract and Specification Process**

For the assigned task, the Consultant shall provide support to the Contract and Specification Process in accordance with Section 487 of Dictionary of Standardized Work Tasks.

**600 POST DESIGN SERVICES**

In addition to Section 600 of the Dictionary of Standardized Work Tasks, the Consultant shall assume the responsibility for adequate, professional record keeping (field notes, telephone conversations, agendas, minutes, correspondence, maps,

drawings, reports, photographs) and samples as appropriate. Such files will be maintained in chronological order by subject to facilitate review and hearing court appearances, if necessary.

*For ITS projects*, the Consultant shall:

a. Advise the Department on how to proceed with the complicated repairs or upgrades.
b. Observe, evaluate, and monitor contractor activities throughout the installation of the equipment.
c. Provide first-hand knowledge of the current equipment installation and configuration.
d. Ensure that contractor-supplied equipment is compatible with the existing equipment and facilities.
e. Participate and assist in the installation and testing of state-furnished equipment (e.g., dynamic message signs).

**700 MATERIAL FURNISHED BY ADOT/LPA**

ADOT or the Local Public Agency will provide materials available as noted in the Task Order Scope of Work. The Consultant must refer to sections 710 through 760 of the Dictionary of Standardized Work Tasks

**730 Record Documents**

ADOT or the Local Public Agency will provide the Consultant the following ADOT drawings:

A. Available "as-built" plans
B. Available Right-of-Way plans
C. Available Mapping/Aerial photography

**750 Environmental Studies**

ADOT will provide information and materials available as described in the Task Order Scope of Work.

For LPA projects, the Consultant may be required to obtain the environmental clearance, if one does not exist, with assistance from ADOT.

**760 Base Sheets**

ADOT will provide materials available as specified in the Task Order Scope of Work and described in Section 760 of the Dictionary of Standardized Work Tasks.

For LPA projects, the Consultant may be required to provide base sheets from the survey data that shows field surveys for location of existing right-of-way, topographic surveys, drainage surveys and utility locations.

**1000 CONTRACT ADMINISTRATION**

The work in this contract shall be administered in accordance with section 1000 of the Dictionary of Standardized Work Tasks.

**1022 Subcontract Services**

It is recognized that due to the nature and scope of the required services, it may be desirable for the Consultant to subcontract portions of work. Any subcontracted firms must be approved in writing prior to initiation of any work. The volume of work performed by subconsultants shall not exceed forty-nine percent (49%) of the total contract amount unless waived in writing by the Department.

**1027 Site Visit**

The Task Order Scope of Work for each project will clarify the need and assignment of responsibility for a site visit. If required, a site visit will be held within fifteen (15) working days of the receipt of written Notice to Proceed.

**1050 Value Analysis**

Value Analysis studies are not anticipated for work under this contract.

**1060 Reviews and Submittals**

Submittals shall be in accordance to Sections 1063 to 1066 of the Dictionary of Standard Work Tasks unless otherwise specified by the PM for each Task Order Scope of Work.

Subsequent to submittal of the Stage II documents, a design review meeting may be held at the project site. The Task Order Scope of Work shall identify the field staking requirements.

**RESPONSIBILITY CHART**
**ATTACHMENT A**

| ITEMS | SCOPE SECTION | CONSULTANT | ADOT | OTHERS |
|---|---|---|---|---|

**A. AERIAL MAPPING (may be complete)**
**1.** Geodetic Control
**2.** Photogrammetric Control & Panels
**3.** Aerial Photography
**4.** Plotter Compilation
- **A.** Planimetric Map
- **B.** Contour
- **C.** Topographic Map

**B. CONTROL SURVEYS (may be complete)**
**1.** Geodetic Control
**2.** Horizontal
**3.** Vertical
**4.** Topographic Map
**5.** Utility Locations
**6.** Right-of-Way
**7.** Roadway Cross Sections
**8.** Drainage Cross Sections
**9.** Structures Surveys

**C. ENVIRONMENTAL (may be complete)**
**1.** Environmental Analysis Document
**2.** Air Quality Technical Report
**3.** Noise Analysis Technical Report
**4.** Cultural Resources Survey

**D. MATERIALS INVESTIGATION**
**1.** Provide Soil Survey
- **A.** Roadway
- **B.** Lateral Ditches
- **C.** Earthwork
- **D.** Retention/Detention Ponds

**2.** Provide Bridge Foundation and Retaining/Sound Wall Foundation Investigations
**3.** Provide Testing and Analysis
**4.** Provide Pavement Design
**5.** Materials Memorandum

**E. DESIGN TRAFFIC DATA**
**1.** Gather Statistics
- **A.** 2-Way ADT
- **B.** Turning Movements
- **C.** 24 Hour Traffic Counts

**2.** Prepare Traffic Data Sheets
**3.** Prepare Equivalent 18 Kips
**4.** Prepare Traffic Analysis
**5.** L.O.S. Analysis
**6.** Comp. Traffic Control Device Plan

**RESPONSIBILITY CHART**
**ATTACHMENT A**

| ITEMS | SCOPE SECTION | CONSULTANT | ADOT | OTHERS |
|---|---|---|---|---|
| **F. RIGHT-OF-WAY** | | | | |
| **1.** Develop Requirements | | | | |
| **2.** Secure Title Search | | | | |
| **3.** Prepare R/W Plans and Legal Descriptions | | | | |
| **4.** Prepare Transfer Documents | | | | |
| **5.** Provide Appraisals | | | | |
| **6.** Negotiate Right-of-Way | | | | |
| **7.** Condemnation Proceedings | | | | |
| **8.** Testify in Court (by contract modification) | | | | |
| **9.** R/W Cost Estimates | | | | |
| **10.** Relocation Assistance | | | | |
| **11.** Property Management | | | | |
| **12.** Clearance Letter | | | | |
| **G. CONSTRUCTION PLANS** | | | | |
| **1.** Plot Design Survey | | | | |
| **2.** Roadway Plans & Retaining Sound Wall Design (only roadway plans) | | | | |
| **3.** Drainage Design | | | | |
| **4.** Bridge Design | | | | |
| **5.** Roadway Lighting Plans | | | | |
| **6.** Traffic Signal Plans | | | | |
| **7.** Signing & Pavement Marking Plan | | | | |
| **8.** Utility Adjustment Plans | | | | |
| **9.** Maintenance of Traffic Requirements | | | | |
| **10.** Landscape Architectural Design | | | | |
| **H. SECTION 404 PERMIT** | | | | |
| **1.** Coordinate with Permitting Agencies | | | | |
| **2.** Prepare Permit Application | | | | |
| **A.** Forms | | | | |
| **B.** Sketches | | | | |
| **C.** Hydraulic Calculations | | | | |
| **D.** Supporting Documents | | | | |
| **3.** Process Permit Application | | | | |
| **I. UTILITY & RAILROAD** | | | | |
| **1.** Utilities Conflict Identification | | | | |
| **2.** Prior Rights Information | | | | |
| **3.** Conduct Utility Pre-Design Conference | | | | |
| **4.** Review Utility Adjustment Plans | | | | |
| **5.** Secure Utility Relocation Schedule | | | | |
| **6.** Secure Utility Agreements | | | | |
| **7.** Process Relocation Schedule & Agreement | | | | |
| **8.** Clearance Letter | | | | |

**RESPONSIBILITY CHART**
**ATTACHMENT A**

| ITEMS | SCOPE SECTION | CONSULTANT | ADOT | OTHERS |
|---|---|---|---|---|
| **J. COST ESTIMATES** | | | | |
| **1.** Prepare Construction Cost Estimates | | | | |
| **2.** Prepare R/W Cost Estimates | | | | |
| **K. SPECIAL PROVISIONS** | | | | |
| **1.** Roadway Construction Plans | | | | |
| **2.** Bridge Plans | | | | |
| **3.** Signing & Pavement Markings | | | | |
| **4.** Traffic Signal Plans | | | | |
| **5.** Preparation for pre-bid conference | | | | |
| **6.** Attend pre-bid conference | | | | |
| **L. CONTRACTS AND SPECIFICATIONS PROCESS** | | | | |
| **1.** Respond to questions on Final | | | | |
| **2.** Final Revisions | | | | |
| **3.** Addenda to Final, as required | | | | |
| **4.** Preparation for pre-bid conference | | | | |
| **5.** Attend pre-bid conference | | | | |
| **M. POST DESIGN SERVICES** | | | | |
| **1.** Respond to questions on project under construction | | | | |
| **2.** Review and approve shop drawings | | | | |
| **3.** Provide contact person | | | | |
| **N. VALUE ANALYSIS** | | | | |
| **1.** Roadway Construction Plans Review | | | | |
| **2.** Bridge Construction Plans Review | | | | |
| **3.** R/W Plans Review | | | | |
| **O. SUBMITTAL REVIEWS** | | | | |
| **1.** Roadway Construction Plans Review | | | | |
| **2.** Bridge Construction Plans Review | | | | |
| **3.** Design Concept Report Submittal | | | | |
| **4.** Environmental Reports | | | | |
| **5.** Stage I Design Submittal | | | | |
| **6.** Stage II Design Submittal | | | | |
| **7.** Stage III Design Submittal | | | | |
| **8.** Final Design Submittal | | | | |

**ATTACHMENT B**

The following is the distribution of reports, plans, estimates and special provisions as specified in Paragraph 1060 of the Scope of Work. Local Public Agency project distribution lists shall be developed in consultation with the Local Public Agency and ADOT PM on a project by project basis.

**DISTRIBUTION LIST**
(SAMPLE)



**PLANS - SPECIAL PROVISIONS - COST ESTIMATES (Stage I, II, III & IV)**

| Location | Title | No. of copies |
|---|---|---|
| Bridge Group | Bridge Design Leader | 1 |
| Contracts & Specifications | Transportation Engineer | 1 |
| District | District Engineer | 1 |
| District | Resident Engineer | 3 |
| District | Maintenance Foreman | 1 |
| District | Regional Traffic Engineer | 1 |
| Environmental Planning | Manager | 1 |
| FHWA | Area Engineer | 1 |
| Materials | Sr. Pavement Design Engineer | 1 |
| Materials | Geotechnical Section Engineer | 1 |
| Right-of-Way Plans | Manager | 1 |
| Roadside Development | Manager | 1 |
| Roadside Development | National Forests Coordinator | 5 |
| Roadway Design Section | Engineer-Manager | 1 |
| Roadway Predesign Section | Engineer-Manager | 1 |
| Statewide Project Mgmt Section | Project Manager | 1 |
| Utilities & Railroad | Engineer-Manager | 1 |

**CROSS-SECTIONS, if required**

| Location | Title | No. of Copies |
|---|---|---|
| District | District Engineer | 1 |
| District | Resident Engineer | 1 |
| Materials | Geotechnical Section Engineer | 1 |
| Roadside Development | National Forest Coordinator | 3 |
| Roadway Design Section | Engineer-Manager | 1 |
| Roadway Predesign Section | Engineer-Manager | 1 |
| Statewide Project Mgmt Section | Project Manager | 1 |
| Traffic Design | Traffic Engineer | 1 |

**AASHTO REPORT, if required**

| Location | Title | No. of Copies |
|---|---|---|
| Roadway Group | Assistant State Engineer | 2 |
| Statewide Project Mgmt Section | Project Manager | 1 |

**DRAINAGE REPORT**

| Location | Title | No. of Copies |
|---|---|---|
| Bridge Group | Bridge Design Leader as approp. | 1 |
| Roadway Group | Drainage Design Leader | 1 |
| District | District Engineer | 1 |
| Roadway Design Section | Engineer-Manager | 1 |

**ATTACHMENT B**
**DISTRIBUTION LIST**



**FOUNDATION REPORT, if required**

| Location | Title | No. of copies |
|---|---|---|
| Bridge Group | Bridge Design Leader | 2 |
| Materials | Geotechnical Section Engineer | 3 |

**GEOTECHNICAL REPORT**

| Location | Title | No. of copies |
|---|---|---|
| Materials | Sr. Pavement Design Engineer | 1 |
| Materials | Geotechnical Section Engineer | 3 |

**MATERIALS DESIGN REPORT/PAVEMENT DESIGNS**

| Location | Title | No. of copies |
|---|---|---|
| Contracts & Specifications | Transportation Engineer | 1 |
| District | District Engineer | 1 |
| District | Resident Engineer | 1 |
| Materials | Sr. Pavement Design Engineer | 3 |
| Statewide Project Mgmt Section | Project Manager | 1 |

**ATTACHMENT C**
**REFERENCES AND ATTACHMENTS**

## Group Websites

Bridge Design: http://www.azdot.gov/business/engineering-and-construction/bridge

Materials and Geotechnical: http://www.azdot.gov/business/engineering-and-construction/MaterialsGroup

Survey and Mapping: http://www.azdot.gov/business/engineering-and-construction/EngineeringSurvey

Contract and Specifications: http://www.azdot.gov/business/ContractsandSpecifications/CNS_Stored_specs.asp

Environmental Planning Group: http://www.azdot.gov/business/environmental-services-and-planning

Multimodal Planning Division: http://mpd.azdot.gov/planning/transportation-programming and

http://mpd.azdot.gov/planning/transportation-programming/planning-to-programming

Right-of-Way Group: http://www.azdot.gov/business/RightofWay_Properties

Roadway Engineering Group (Roadway Design, Drainage and Roadside Development):
http://www.azdot.gov/business/engineering-and-construction/roadway-engineering

Traffic Design: http://www.azdot.gov/business/engineering-and-construction/traffic

Utility & Railroad: http://www.azdot.gov/business/engineering-and-construction/utility-and-railroad-engineering

Transportation Technology Group: http://www.azdot.gov/business/engineering-and-construction/transportation-technology

## Bridge Inspection

References developed, published, and adopted by the Department and other agencies for in-depth bridge inspection include:

a. ADOT Bridge Inspection Guidelines: http://www.azdot.gov/business/engineering-and-construction/bridge/guidelines/guidelines-bridge-inspection
b. National Bridge Inspection Standards (NBIS), Code of Federal Regulations Title 23 Part 650, Subpart 'C': http://www.fhwa.dot.gov/bridge/nbis.htm
c. Federal Highway Administration (FHWA) Recording and Coding Guide for the Structure Inventory and Appraisal of Nation's Bridges: http://www.fhwa.dot.gov/bridge/bripub.htm
d. American Association of State Highway and Transportation Officials (AASHTO) Manual for Bridge Evaluation: http://www.transportation.org/
e. ADOT Traffic Control Manual for Highway Construction and Maintenance: http://azdot.gov/Highways/Traffic/Standards.asp
f. FHWA Inspection of Fracture Critical Bridge Members: http://www.nhi.fhwa.dot.gov/training/nhistoresearchresults.aspx?get=&course_no=&keyword=fracture%20critical&title=&pubnumyr=&pubnumsq=&format=ALL
g. FHWA Safety Inspection of In-Service Bridges: http://www.nhi.fhwa.dot.gov/training/NHIStoreSearchResults.aspx?get=&COURSE_NO=130055&KEYWORD=&TITLE=
h. FHWA Bridge Inspector's Reference Manual: http://www.nhi.fhwa.dot.gov/training/NHIStoreSearchResults.aspx?get=&COURSE_NO=130055&KEYWORD=&TITLE=
i. AASHTO Standard Specifications for Highway Bridges: http://www.transportation.org/

j. ADOT Bridge Load Rating Guidelines: http://azdot.gov/docs/default-source/bridge-group/loadratingguidelines.pdf?sfvrsn=2

k. AASHTO LRFD Bridge Design Specifications: http://www.transportation.org/

l. FHWA Recommended Framework for a Bridge Inspection QC/QA Program: http://www.fhwa.dot.gov/bridge/nbis.htm

m. FHWA Team Leader Qualifications Code of Federal Regulations Title 23 CFR 309.b: http://www.ecfr.gov/cgi-bin/text-idx?&c=ecfr&tpl=/ecfrbrowse/Title23/23tab_02.tpl

n. FHWA Evaluating Scour at Bridges HEC 18: http://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm

o. FHWA Stream Stability at Highway Structures HEC 20: http://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm

p. FHWA Bridge Scour and Stream Instability Countermeasures HEC 23: http://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm

q. FHWA Scour Critical Bridge - Plan of Action (POA): http://www.fhwa.dot.gov/engineering/hydraulics/bridgehyd/poaform.cfm

r. ADOT Bridge Hydraulics Guidelines: http://azdot.gov/docs/default-source/bridge-group/hyddgnguidelines.pdf?sfvrsn=2

**ATTACHMENT D**

**BRIDGE INSPECTIONS**

The ADOT Bridge Management Section (BMS) is responsible for the inspection of bridges on the State Highway System and maintaining related bridge inventory records in accordance with the National Bridge Inspection Standards (NBIS). BMS establishes and maintains a Bridge Management System for all publicly owned bridges throughout all jurisdictions in Arizona. The Bridge Management System is used to evaluate repair needs on the State Highway System and coordinate repairs through the Bridge Preservation Program; evaluate rehabilitation and replacement needs for bridges on all systems and jurisdictions for inclusion in the Department's Five Year Transportation Facilities Construction Program. The Bridge Management Section also reviews overload and encroachment permit requests.

The Consultant shall perform bridge inspections of all bridges provided in a task order. The type of bridge inspection will be provided in the task order; example: detailed (in-depth), fracture critical, underwater, damage, etc.), safety (routine), emergency, special, scour evaluations, scour plan of action. Additionally, the Consultant may tighten or replace bolts/nuts, develop repair plans and specifications or perform a bridge load rating analysis, if required.

All inspections are to be carried out per directions given by the Department.

The Department reserves the right to cancel or add inspections as necessary. If bridge inspections are cancelled, the negotiated inspection cost for the type of inspection required will be deducted from the total lump-sum cost. A similar procedure will be used if new bridges are added to a task order.

APPROACHES

1. Inspect approach pavement for unevenness, settlement, or roughness and for any condition that is causing impact loads on the bridge.
2. Inspect for cracking or settlement in reinforced concrete approach slabs, if existing.
3. Examine joints between the approach pavement and the abutment back wall, if existing, to determine if there is adequate clearance for thermal movement.
4. Determine if joints are adequately sealed.
5. Inspect the conditions of the shoulders, slopes and drainage.
6. Inspect the conditions of the approach guardrails and their attachments to the structure, if any.

A. WATERWAYS

1. Observe the adequacy of the waterway openings under the structure.
2. Record any visible high water marks.
3. Inspect existing bank and slope protection plus other protective devices, if any, to determine their soundness and functioning.
4. Inspect the waterway for any obstruction, which would preclude the free flow of water.
5. Inspect the debris or growth which may contribute to scour or which may be a potential fire hazard.
6. Observe the areas surrounding the bridge and its approach for any existing or potential problems.

B. PIERS AND ABUTMENTS

1. Inspect footing for any significant scour or undercutting, with particular attention given to foundations on spread footings.
2. Inspect for erosion conditions that might cause horizontal instability.
3. Determine if any earth or rock fills piled against, or placed adjacent to substructure units not provided for in the original design, are producing unstable conditions.

4. Examine all exposed concrete for the existence and severity of cracks and any deterioration of the concrete.
5. Inspect for effects of deicing salts or other external contamination.
6. Inspect structural steel partially encased in substructure concrete at the face of exposure for deterioration and movement.
7. Evaluate any suspected movement or settlement using surveying methods and record discrepancies, if any.
8. When the bridge is scour critical with rating of 3, for NBI item 113, review Plan of Action documents for the bridge and note any changes in channel / scour conditions.

C. UNDERWATER SUBSTRUCTURE INSPECTION

1. Perform an NBI underwater inspection of substructure when specifically requested.
2. Inspect the portions of the substructure subject to being submerged for damage, cracking, settlement, steel corrosion, deteriorated & scoured concrete, deteriorated paint, broken and/or dislodged stones in masonry structures, deterioration and/or damage to piling, damage or wood decay, etc.

   Submit written inspection procedures for approval by the Department prior to the inspection clearly identifying the location of underwater elements, including physical scour countermeasures. Specify the frequency of inspections. Describe any specific risk factors. Clearly detail inspection methods and equipment that were utilized.

   New or updated procedures will become part of the bridge folder and be available for subsequent inspections.
3. Provide special attention to determine the uniformity of bearing of footings & surrounding foundation materials, the lateral stability & soil support to the pile foundations, the effect or potential effect of scour, the soundness or effectiveness of any previous repairs, etc.
4. Sound all timber and probe with a heavy-duty blade (6 inch minimum), ice pick or awl.
5. Identify limits of past scour protection.
6. Submit written qualifications of underwater bridge inspectors and divers.

D. STEEL STRINGERS, FLOOR BEAMS AND GIRDERS

1. Inspect steel stringers for cracks and corrosion, especially along the top flanges and at the ends where they bear and where debris may have collected.
2. Inspect flanges and webs for damage or misalignment.
3. Observe all connections to make sure they are secure and check at least 10% of the rivets or bolts in each joint or splice for tightness or proper torque. The Consultant should be selective and not check rivets or bolts where evidence indicates that they have been checked on previous inspections.
4. Examine shear and flexure locations of the beams.
5. Examine the end connections of floor beams for corrosion as they are exposed to moisture and deicing chemicals from the roadway.
6. Inspect the flanges of the floor beams for corrosion, particularly on open grid decks.
7. Investigate the floor beam connections for loose fasteners.
8. On secondary members, inspect the portals for collision damage. Check for loose fasteners at the bracing connections. Examine the lateral bracing gusset plates for corrosion and distortion. Examine the alignment of the lateral bracing members.
9. Check horizontal connection plates which can trap debris and moisture and are susceptible to high degree of corrosion and deterioration.
10. Examine steel girders for cracking and corrosion, especially along the upper flange, around rivet or bolt heads at contact surface where moisture may enter between flange plates.
11. Examine steel details for cracking, distortion and corrosion at gusset and diaphragm connections and at bearings.

12. Inspect weld areas for cracks, especially at unusual type connections, on curved sections, reentrant corners and copes.
13. Inspect weld areas for cracks, etc., when there is an abrupt change in size of metal or configuration, which might produce an area of concentrated stress.
14. Inspect weld areas where vibration and movements could produce cracks.
15. Inspect web stiffeners for any evidence of buckling.
16. Determine if any unusual vibration or excessive deflections occur under passage of heavy loads.
17. Inspect hinges to see that all elements are functioning properly. Should disassembly be required, a work plan shall be submitted to the Department for approval, before proceeding.
18. Note if hinge hanger bars are vertical or if any sizable deviation from a plumb position exists in addition to that normally caused by thermal movements.
19. All loose/missing bolts/nuts noted during the inspection must be tightened or replaced at the same time.

E. CONCRETE BEAMS AND GIRDERS

1. Examine bearing areas at the end of beams or girders for spalls or cracks.
2. Inspect tension areas for flexure cracks and support areas for shear cracks.
3. Investigate areas that have been previously damaged or repaired.
4. Examine areas exposed to drainage.
5. Check for exposed reinforcing bars or strands.
6. Check for evidence of sagging of girders.
7. Check for excessive deflection or misalignment.

F. BEARINGS

1. Examine all bearing devices to ascertain that they are functioning properly.
2. Inspect pier or abutment settlement for any effect on proper bearing function.
3. Inspect anchor bolts for any damage and determine if they are secure.
4. Inspect expansion bearings to determine if they can move freely and are clear of all foreign material.
5. Inspect rollers and rockers to determine if they bear evenly for their full length and are in proper position relative to temperature at the time of inspection.
6. Examine grout pads and pedestals for cracks, spalls or deterioration.
7. Examine bearings carefully for problems from unusual occurrences, such a heavy traffic damage, earthquakes and rock slides.
8. Examine the concrete for cracks and spalls at abutment seats and pier caps where girders bear directly on concrete.
9. Inspect for shear cracks in the ends of the beams and for edge cracks and spalls in the supporting members.
10. Inspect rockers to see that they move freely about their pins or bearings. Record the amount and direction of rocker tilt and the ambient temperature.

G. EXPANSION JOINTS

1. Note if there is adequate space for thermal movement, if the joint is open an excessive amount and if the joint is clear of all debris.
2. Inspect sealed type joints to see that the joint condition will prevent the accumulation of rock, sand, and other non compressible material.

3. Examine steel finger type joints and sliding plate joints for evidence of loose anchorages, cracking or breaking of welds, or other defective details.
4. Sound the concrete deck adjacent to all expansion devices for voids or delimitations in the deck.
5. Examine the underside of the expansion joints so far as possible to detect any impending problem.
6. Record existing joint opening and the ambient and steel temperature at the time of measurement.

H. DECKS

1. Inspect concrete decks for cracking, delamination, leaching, scaling, spalling and other evidence of deterioration.
2. Inspect asphaltic or other type deck wearing surface for deterioration such as cracking or breaking up of the surfacing, or excessive rutting in the normal traffic wheel paths.
3. Examine the underside of the deck slab for indications of deterioration or distress.
4. Note any evidence of water passing through cracks in the deck slab.
5. Inspect deck drains and scuppers to see that they are open and clear.
6. Inspect deck drain outlets where discharge water may be detrimental to other members of the structure, cause fill and bank erosion, or spill onto a traveled way below.

I. CURBS

1. Examine concrete curbs for cracks, spalls and deterioration.
2. Note any loss of curb height resulting from the build-up of the deck surface.
3. Inspect for damaged rail post embedment.

J. BRIDGE RAIL

1. Examine concrete end posts for cracks, spalls, scaling or other deterioration of the concrete.
2. Inspect steel bridge rails for condition of paint and corrosion.
3. Inspect for rust stains on the concrete around the perimeter of steel posts which are set in the pockets.
4. Inspect all bridge rail components for any damage from traffic.
5. Inspect the vertical and horizontal alignment of all bridge rails for any indications of settlement in the substructure or any bearing deficiencies.
6. Examine all bridge rail joints to see that they are open and functioning properly.
7. Identify and list any damaged components.

K. TRUSS, ARCH RIBS AND/OR COLUMNS

1. Sight along the roadway rail or curb and along the truss chord members to determine any misalignment, either vertical or horizontal.
2. Investigate any deviations from the normal alignment.
3. Inspect each steel truss compression member to see if it is straight with no kinks or bows.
4. Inspect all upper and lower lateral-bracing members for damage, and to observe if they are properly adjusted and function satisfactorily.
5. Inspect lateral and sway bracing under traffic for excessive vibration or movement.
6. Examine the condition of the paint and document the extent of corrosion.
7. Inspect bolt and rivet heads for corrosion.

8. Inspect connection details for corrosion, especially where contaminants from the roadway surface such as deicing chemicals may be deposited on the steel.
9. Look for deformation in riveted or bolted multi-plate sections where moisture may have entered and corroded the contact surfaces of the plates causing them to be pushed apart.
10. Inspect the condition of the pins at the connections and determine that nuts and keys are in place.
11. Observe all connections to make sure they are secure and check at least 10% of the rivets or bolts where evidence indicates that they have been checked on previous inspections.
12. Check gusset plates for any section loss, distortion, corrosion, etc. and document accordingly.
13. Identify and list all members that are damaged, have been modified, or have section losses due to corrosion.

L. FATIGUE DAMAGE AND FRACTURE CRITICAL MEMBERS

1. Inspect the locations where the values of these three factors (the number of load applications, the magnitude of live load tensile stresses, and the size of the initial defect and flaw) are highest or largest.
2. Inspect at or near joints and connections in bridges on high traffic volume arteries where fatigue cracks often develop.
3. Inspect AASHTO fatigue strength Categories E and E' details where fatigue cracks are susceptible to grow.
4. Inspect locations of joints and connections subjected to unintended forces or displacements even though structural details have high fatigue strength (such as Category C or even B).
5. Inspect diaphragm and floor beam connections at girder webs.
6. Inspect connections between stringers and floor beams, and between girders and pier caps of transverse girders.
7. Inspect lateral bracing connections on truss or girder structures, particularly when the laterals are connected to gusset plates on girder webs adjacent to floor beam or diaphragm connections of plate girders.
8. Inspect at or near joints and connections where the conditions of original installation have changed due to corrosion, lack of maintenance, alteration or adding of secondary and auxiliary components. Unintended forces and stresses that may lead to fatigue cracking. These details include pin-connected suspension hangers of plate girder bridges and long truss bridges, frozen eye bar heads, malfunctioning bearings severely corroded components and attachments.
9. Document Fracture Critical Members and any fatigue prone details of the structure in the Superstructure topic of the inspection report. If they do not exist, a statement should be made accordingly. The Department maintains a Fracture Critical Members In-Depth Inspection Plan for each applicable bridge. Inspection team must review the Plan prior to inspection. If there is a need to revise the plan, the Consultant should obtain approval from the Department.

M. ENCROACHMENTS

1. Note if any encroachment is located where there is a possibility that it may be hit and damaged by traffic or rockslides.
2. Check that encroachments are adequately supported and are not a hazard to any traffic which may use or pass under the bridge.
3. Inspect for wear or deteriorated shielding and insulation on power cables.
4. Inspect for any adverse effect encroachments may have on the bridge.
5. Note the aesthetic effect encroachments may have on the bridge.
6. Note in the report if any overhead lines cross the structure.
7. Identify and list all encroachments.

N. AESTHETICS

Paint is the most common item on the bridge where appearances may dictate the need for work much earlier than would otherwise be required from a pure protective coating requirement. Note the condition of the paint with regards to this need. If paint on the steel structures was not previously tested for lead content, determine presence/absence of lead in the paint during

the inspection and make the statement regarding the findings in the inspection report.

O. MISCELLANEOUS ITEMS

1. Note all physical features of the bridge which may have an effect on its structural integrity.
2. Note any damaged or deteriorated sections and obtain adequate data of these areas so that their effect can be properly evaluated in a stress analysis.
3. Determine as reasonably as possible the loss in the cross sectional area of steel that is severely corroded, concrete that has deteriorated, or timber that has decayed.
4. Determine if deep pits, nicks or other defects exists that may cause stress concentration areas in any structural members.
5. Inspect physical condition of threaded members such as truss rods at turnbuckles.
6. Measure carefully any misalignment, bends, or kinks in compression members.
7. Observe the bridge during passage of heavy loads to determine if there is any excessive vibration or deflection.

P. PHOTOGRAPHS

Color photographs of structural deficiencies, of items to be repaired and of items requiring documentation or clarification, shall be provided. Each photograph shall be properly referenced with date taken, description and location of items shown.

All photographs must be stored digitally in the jpg format (JPEG compression) and saved in individual computer files following the naming convention described in the ADOT Bridge Inspection Guidelines.

The photographs must be of good digital quality (minimum of 120 pixels/inch) with a maximum image size of 7.5” x 5” (image must be totally displayed in the Arizona Bridge Information Storage System (ABISS) without scroll bars when using an 800x600 screen resolution).

The minimum number of photographs taken per bridge should be five (5). These are:

a. One roadway ID
b. One elevation ID
c. One typical top of deck condition photograph
d. One typical deck underside photograph
e. One typical deck joint photograph

In addition to this, photographs of all completed repair or maintenance recommendations should be included. One additional photograph per repair or maintenance recommendation must be taken if the repair or maintenance need was not clearly visible on one of the other photographs. A description is required for each photograph.

The “Miscellaneous Notes” section of the inspection report must list all photographs with their descriptions. The following photograph description convention should be used for describing Roadway and Elevation photographs of the bridges:

a. Roadway ID – Looking (East/West or North/South)
b. Elevation ID – Looking (North/South or East/West)
c. The typical top of deck condition photo should be described as “Typical top of Deck Condition”.
d. The typical underside deck condition photograph should be described as “Typical underside of Deck Condition”.
e. Typical deck joint photograph should be described as “Typical Deck Joint Photograph”.

Digital photographs will be printed using the Department furnished “Photo Reports” computer application and submitted to BMS with “Draft” inspection reports. The photographs will be returned to the Consultant with draft reports and review

comments. The photographs (with any corrections if needed) should be resubmitted to the Department with "Final" bridge inspection reports.

If the Department changes the Photo Reports Software during the term of the contract, the Consultant will be required to purchase it and other required hardware at their own expense.

Q. EQUIPMENT AND TRAFFIC CONTROL

The Consultant shall provide all personnel and equipment necessary to perform the inspection work, including all necessary traffic control devices for a safe traffic environment during all bridge inspections. Routine bridge inspection generally does not require specific traffic control as part of the task order, but the Consultant must provide for a safe traffic environment during all bridge inspections.

The Consultant shall prepare site specific Traffic Control Plans and submit them for approval to the Department pertaining District or Local Public Agency offices who owns the bridges at least two weeks prior to start of the inspection.

It is advised that the owner that has jurisdiction over the bridge and the ADOT Traffic Engineering personnel should be consulted in planning the traffic control at the bridge. The approved Traffic Control Plans should be sent to BMS for record.

The Consultant shall contact and obtain necessary approvals from applicable railroad companies for inspecting railroad overpasses. Inspection of the railroad underpasses is the responsibility of the railroad company.

R. REPAIR, MAINTENANCE AND CRITICAL FINDINGS RECOMMENDATIONS

Whenever a repair or maintenance is recommended, a repair or maintenance task must be added to the Repair Report or List of Maintenance Items, respectively. Each repair or maintenance task must be clearly defined and must refer to a digitally attached photograph. List of Maintenance Items must be in Microsoft Word.

Minor or insignificant repairs shall be documented in the comment section of appropriate inspection report topic in the Arizona Bridge Information Storage System (ABISS) for the information of maintenance staff.

Repair needs of an urgent nature (critical findings) must be immediately communicated to ADOT's BMS and/or the Local Public Agency if appropriate. FHWA will be notified by the Department of the actions taken to resolve or monitor critical findings. The Consultant shall prepare plans and specifications for urgent repair projects, as necessary and directed by the Department.

S. LOAD ANALYSIS

A load analysis will be required when the structure is identified in the remarks column of the bridge list provided with each task order. The Consultant shall notify the Department if any unusual changes were noticed during the inspection such as section loss of a steel member, etc., and obtain all necessary details.

If a rating analysis needs to be performed and the bridge was not originally identified for rating analysis by the Consultant, the Department will make the determination of who will do the analysis without having to go back to the field to obtain all necessary details.

Bridges shall be rated using the Load and Resistance Factor Design (LRFD) per the latest edition of AASHTO "The Manual for Bridge Evaluation". The load capacity ratings of all bridges shall be performed using VIRTIS, GTSTRUDL, MDX software or similar software; however, it is preferable to use VIRTIS software for load capacity ratings. Gusset plates of steel bridges shall be rated per FHWA load rating guidance.

All bridge rating models shall be transmitted electronically to ADOT's Bridge Technical Section for record and maintenance. Detailed bridge load rating calculations, including assumptions and a sealed and signed Bridge Load Rating Summary Report for each bridge, shall be submitted to ADOT's Bridge Technical Section for record. The sealed and signed Bridge Load Rating Summary Report without calculations and assumptions shall also be submitted to ADOT BMS.

T. SCOUR EVALUATION AND PLAN OF ACTION

A scour evaluation will be required when the structure is identified in the remarks column of the bridge list provided with each task order. A scour plan of action will be required when the structure is identified in the remarks column of the bridge list provided with each task order.

Scour evaluation and plan of action will be performed based on instructions and criteria provided by the Department and FHWA.

U. NONDESTRUCTIVE TESTING

The Consultant shall provide all personnel and equipment necessary to perform nondestructive testing of certain key bridge members as a part of the contract. The extent of the scope of any testing shall be determined necessary by the Consultant. The amount of testing of members, if any that has been conducted should demonstrate that no further nondestructive testing is required. The report of nondestructive testing performed shall be separately attached to the bridge inspection report. A comment should be written in the appropriate section (e.g. deck, superstructure, substructure, etc.) of the report regarding whether nondestructive testing was performed or was not required.

V. DIAGRAMS

Channel profile and vertical and horizontal clearance diagrams must be drawn anew for each applicable structure. The diagrams may be drawn electronically or may be hand drawn, and should conform to Department practice and format. Sample diagrams are included in the ADOT Bridge Inspection Guidelines.

W. Coordination with the Department Maintenance Districts and/or Local Public Agencies

The Consultant must inform the Department District Maintenance superintendent and/or the correspondent city official of all bridge inspections to be conducted in the District/City. A copy of the approved bridge inspection schedule should be provided to the superintendent. The District staff is very helpful in providing site-specific information for the interim time periods between inspections.

X. MISCELLANEOUS

1. The Consultant must use the ABISS to record and generate all inspection reports. All inventory items must be updated to reflect the latest available data. The Consultant shall ensure that data is coded correctly into the system and that all required calculations are validated by the inspection team leader. If the Department changes the Bridge Inspection Software during the duration of this contract, the Consultant shall be required to purchase it and other required hardware at their own expense.
2. The inspection cost of each individual bridge including traffic control and the equipment used such as under bridge inspection vehicle, bucket, or ladder, etc., shall be provided by the Consultant as a supplemental sheet of itemized costs for each inspected bridge.
3. All permits that may be required to perform the inspection must be obtained by the Consultant.
4. Copies of available plans and any other relevant data for the inspection may be furnished to the Consultant upon request.
5. Copies of previous inspections may be furnished by the Bridge Management Section in case the last inspection is not available electronically.
6. The Consultant is not required to input estimated repair cost for recommended repair items on the Repair Report.
7. The Consultant can download the current Average Daily Traffic counts (ADT) from the Department website. The Consultant must obtain ADT count on local roadways from the respective agencies.
8. The Consultant will be issued bridge data in small sub sets as per the request in order to meet the following:
    a. The Consultant is required to submit “Draft” bridge inspection reports to the Bridge Management Section for review and comments within three (3) weeks after completion of field inspection of the structure.
    b. BMS will send the review comments on the submitted “Draft” reports to the Consultant within four (4) weeks.
    c. The Consultant is required to submit the “Final” completed bridge inspection reports and other documents to the

BMS within two (2) weeks of receipt of review comments from the Department.

9. The Consultant shall develop a Bridge Inspection Quality Control/Quality Assurance (QC/QA) Program following the FHWA recommended framework and ADOT Bridge Inspection Guidelines Quality Assurance and Control.

Y. DELIVERABLES

The Consultant shall provide the following for each task order as outlined:

1. Final updated electronic inspection data:
    a. ABISS "check-in" database
    b. Structure inventory data
    c. Inspection ratings and notes
    d. Bridge element condition state ratings
    e. Repair, Maintenance and Critical Findings recommendations if applicable
    f. Color digital photographs
    g. Channel Profile Diagram, if applicable
    h. Vertical and Horizontal Clearance Diagram if applicable
    i. Bridge Load Rating Summary Report, models and calculations, if applicable
    j. Bridge Scour Evaluation, if applicable
    k. Bridge Scour Plan of Action, if applicable
    l. Attachments
2. Final updated printed data:
    a. Inspection Report (ABISS generated) sealed and signed by the Team Leader (TL) who is a Professional Engineer with an Arizona registration. The Department will be ensuring that all inspections are performed by an approved TL who meets all requirements.
    b. Structure Inventory and Appraisal (ABISS generated)
    c. Repair Report, if applicable (ABISS generated)
    d. List of Maintenance Items, if applicable (Microsoft Word generated)
    e. List of Critical Findings, if applicable
    f. Inspection Photographs (Photo Report generated in color)
    g. Channel Profile Diagram, if applicable
    h. Vertical and Horizontal Clearance Diagram, if applicable
    i. Bridge Load Rating Summary Report with calculations sealed and signed by a Professional Engineer with an Arizona registration, if applicable
    j. Bridge Scour Evaluation, if applicable
    k. Bridge Scour Plan of Action, if applicable
    l. Summary of Bridges Inspected showing bridge numbers, route, milepost, bridge name, inspection dates, etc. ; For Local Public Agencies that do not have route and milepost, a similar local description shall be used and be submitted to the Department/LPA Project Manager/representative at the end of each month in addition to submitting the Draft and Final Submittals
    m. Detailed inspection cost for each bridge
    n. Copies of approved Traffic Control Plans, if applicable

o. Bridge Repair Plans and Specifications, if applicable

p. Attachments

**ATTACHMENT E**

SUBSURFACE UTILITY ENGINEERING

A. Definition and Terms

1. CI/ASCE 38-02: "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data", American Society of Civil Engineers, 2003.
2. MUTCD: "Manual on Uniform Traffic Control Devices", U.S. Department of Transportation, Millennium Edition, December 2009.
3. QL A: Utility Quality Level A as further described herein. Generally, QL A indicates the precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of subsurface utilities, usually at a specific point.
4. QL B: Utility Quality Level B as further described herein. Generally, QL B indicates information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities.
5. QL C: Utility Quality Level C as further described herein. Generally, QL C indicates information obtained by surveying and plotting visible aboveground utility features and by using professional judgment in correlating such information to QL D information.
6. QL D: Utility Quality Level D as further described herein. Generally, QL D indicates information derived from existing records and oral recollections.
7. SUBSURFACE UTILITY ENGINEERING, or SUE: A branch of engineering practice that involves managing certain risks associated with utility mapping at appropriate quality levels, utility coordination, utility relocation design and coordination, utility condition assessment, communication of utility data to concerned parties, utility relocation cost estimates, implementation of utility accommodation policies and utility design.

2. Range of Services

The Consultant shall, but is not limited to:

1. The Consultant performing the field investigation work for this contract must possess a valid Arizona contractor's license.
2. The primary services anticipated to be rendered hereunder are QL A and QL B mapping.
3. Prepare plans showing the existing utility facilities on CADD using utility companies' installation records and verification by surveillance techniques employed by the Consultant. The Consultant will excavate potholes using the vacuum extraction method or other noninvasive means to accurately locate underground utility both horizontally and vertically and to record this information on CADD.
4. Provide all equipment, personnel and supplies for this service that shall be performed in two phases. Phase 1 consists of "designating" services (horizontal mapping of existing utility facilities) and phase 2 consists of "subsurface utility locating" (pothole) services. Provides these services for use by the State's design engineer to assure that utility conflicts at the time of construction are eliminated.
5. Assist the State in conducting training and orientation sessions for interested parties. A training session will cover such items as available services, detection and excavation technology, project deliverables, and task order development.
6. Make reasonable provision for State representatives to observe and inspect the Consultant's work in process.
7. The term "designating" and "locating" phases together constitute the total predesign of underground utility locating and mapping services.
8. The term "designate" means both to indicate, by marking, the presence and horizontal location of a subsurface utility using geophysical prospecting techniques and mapping as well as mapping above ground utilities. The Consultant shall use its best efforts and expertise in designating all requested surface utilities and visual observation for above ground utilities. The State shall use the "designation" information for design purposes and as an indication of the utility's location only. These "designations" may not be relied upon for construction and excavation since State law requires notification of each facility owner before excavation.

9. The term “locating” means to obtain the accurate horizontal and vertical of a subsurface utility by digging a pothole as described above.

3. Work Standards

1. Except as may be modified or specified or otherwise approved by the State, the collection and depiction of information, and any required submittals shall conform to the applicable provisions of CI/ASCE 38-02, "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data". A copy of CI/ASCE 38-02 is available for inspection by contacting the PM/Utility Section Coordinator, or may be ordered from the American Society of Civil Engineers.
2. It is intended that this scope of work be construed harmoniously with CI/ASCE 38-02; however, in the event of conflict, the provisions of this scope of work shall take precedence.
3. The consultant shall follow current State CADD drafting standards in the presentation and depiction of utility features. Current standards can be obtained through Engineering Records. The web site is http://www.azdot.gov/Inside ADOT/Misc/PDF/Publications 0806.pdf
4. All drawings shall conform to State drafting and CADD standards, including CADD file naming convention and layer designation. It is desirable that the consultant uses the current State approved version of Bentley's Microstation software and to have all graphic files in Microstation's native design file (.DGN) format as well as contain data in vector format only. No zipped files will be accepted. Reference files are not to be copied into the plan sheets master file.

4. Subsurface Utility Designating Services

The Consultant shall:

1. Obtain and review plans provided by the State and obtain utility owner's records as available and supplied by the utility owners.
2. Obtain all necessary permits from city, county, state and other municipal jurisdictions to allow work in existing streets, roads, and right of way for the purpose of marking, measuring and recording the location of existing utilities.
3. Designate measure and record the horizontal location of the existing utilities and their major laterals to existing buildings, referenced to the State control line, within the Project limits designated by the State.
4. Include on CADD the locations of subsurface utility facilities. These utility designations shall be recorded on CADD and furnished to the State. Plan sheets shall have each utility owner's facilities color coded and accompanied by the signature and date of the individual who designated the utilities.
5. Along with the submission of designating mapping the Consultant shall also provide an ownership list including address of all the utility companies identified in the area so designated along with the name and phone number of their designated representative.
6. Provide all signs, labor and equipment for traffic control complying with the MUTCD, when the Consultant is in or near an existing roadway.
7. The accuracy expected by the State for the designated location will be within 0.6 m (2 feet) of the actual horizontal location.
8. Look for and identify line(s) of unknown function, status, or ownership, obtain, record, and depict information on such line(s) to quality level that is commensurate with that of the original assigned task.
9. Perform interior pipe wall inspections and/or thickness tests of existing buried utility lines, utilizing video, ultrasonic, and/or visual techniques as appropriate.

5. Aerial or Ground-Mounted Designating Services.

The Consultant shall:

1. Obtain from the utility companies their installation records for Aerial or Ground-Mounted facilities.
2. Use visual observations to verify the locations of the Aerial or Ground-Mounted utility facilities.

3. Quality level D or C services shall include records research, identification, surveying, correlation, and/or depiction of aerial or ground-mounted utilities, notwithstanding that such surface features may not be associated with an existing subsurface utility line or system.
4. Include, on CADD, the locations of Aerial or Ground-Mounted utility facilities. These utility designations shall be color coded by utility owner and recorded on CADD and furnished to the State.
5. The accuracy expected by the State for Aerial or Ground-Mounted utilities is within 150 mm (1/2 foot).

6. Subsurface Utility Locating (Pothole) Services.

The Consultant shall:

1. Be given a list of the locations where the State wishes to have potholed. The Consultant shall use the plans that were prepared in Phase I.
2. Obtain all necessary permits from city, county, state or other municipal jurisdictions to allow work in existing streets, roads and right of way for the purpose of excavating, marking, measuring and recording the location of existing underground utilities.
3. Comply with any underground utility damage prevention law.
4. Coordinate with utility company inspectors as required.
5. Provide all labor and equipment for traffic control complying with the Manual on Uniform Traffic Control Devices before occupying a traffic lane.
6. Neatly cut, remove, re-compact and permanently restore paving. Maximum size of pavement cuts shall be 0.3 m (12 inches) by 0.3 m (12 inches).
7. Furnish and install a permanent above ground marker directly above centerline of the structure and record the horizontal location and elevation of the marker and structure with respect to the State control line and bench datum.
8. Where applicable, provide permanent restoration of pavement within limits of the original cut at time of backfill. Such restoration shall comply with the lawful requirements of the governmental authority that issued the applicable excavation permit.

   Whenever potholes are excavated in areas other than roadway pavement, these disturbed areas shall be restored, as nearly as possible, to the condition that existed prior to excavation.
9. Provide a summary of the potholes horizontal and vertical location as well as the individual detailed information for each pothole on the pothole data sheets.

   The presentation data shall conform to the requirements of CI/ASCE 3802 labeled as "Quality Level "A" and will be accompanied by the signature and dated by the individual who recorded such utility location.
10. Prepare one complete set of plans with each utility owner's facilities color-coded and labeled as to type and size along with the location of each pothole clearly plotted.
11. If the pothole location shows the utility to be in a location other than where it was designated, the Consultant shall coordinate with the design engineer to correct the base mapping file for utilities.
12. The accuracy expected for pothole data is +/- 15 mm (0.05 feet) based on the benchmarks provided by the State.
13. Provide the following pothole information on each pothole data sheet:
    a) Elevation of top and/or bottom of utility tied to the datum of the State.
    b) Elevation of existing grade over the utility at the pothole.
    c) Horizontal location using centerline station and offset as well as a minimum of three swing ties to physical structures existing in the field and/or coordinates values compatible with the datum of the State.
    d) Outside diameter of pipe or width of duct banks and configuration of non-encased, multi-conduit systems.
    e) Utility structure material composition, when possible.

f) Identification of bench marks used to determine elevations.

7. Certification and Submittals

1. The utility designation mapping plan sheets and pothole data sheets shall be accompanied by signature, dated and sealed by the Registered Land Surveyor or Professional Engineer responsible for the survey and presentation. The Registrant must be registered in the State of Arizona. The ownership list does not need to be sealed.

2. The electronic utility designation mapping files shall be transmitted directly to the design engineer and to the PM/Utility Section Coordinator. As soon as possible, a signed and sealed color hard copy of the mapping plans showing the date and product transmitted shall be sent to the design engineer and a full size color copy of the transmittal of the hard copies shall be sent to the PM/Utility Section Coordinator.

   In addition, a hard color copy of the mapping plans shall also be sent to the State's PM/Utility Coordinator identified in the Task Order assignment. Failure to provide the required documentation to the PM/Utility Section Coordinator will delay payment of services to the Consultant until the matter is corrected.

3. The pothole data sheets and mapping plan sheets showing the number and location of each pothole shall be transmitted directly to the design engineer and the PM/Utility Section Coordinator. As soon as possible a signed and sealed color hard copy of the pothole data sheets and mapping plan sheets (unsealed) showing the date and product transmitted shall be sent to the design engineer and a color copy of the transmittal of the hard copies shall be sent to the PM/Utility Section Coordinator.

   In addition, a color hard copy of the Pothole Data Sheets and mapping plan sheets shall also be sent to the State's PM/Utility Coordinator identified in the Task Order assignment. Failure to provide the required documentation to the PM/Utility Section Coordinator will delay payment of services to the Consultant until the matter is corrected.

4. All Deliverables Formatting shall conform to the applicable provisions of CI/ASCE 38-02, "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data".

8. Plan Drawings

The utility designations shall be recorded on CADD. Pothole data sheets shall be recorded in Excel or Word format. Each utility designated shall be marked with the appropriate quality level "QL B", "QL C", or "QL D". The designation of QL A shall be shown on the plan sheet at the location the pothole was made. The cover sheet of the mapping or each individual sheet shall contain a legend of the utility designation letter and the name of the utility. Unless otherwise directed, the Consultant shall provide quality level "B" utility data, to the fullest extent possible, for each subsurface utility designating assignment.

ATTACHMENT F
GEOTECHNICAL SERVICES

The following guidance is presented for State projects, and the Geotechnical Operations Engineer (referred in this appendix portion as "Engineer") shall be consulted along with the PM for further guidance.

For any Local Public Agency projects that may require Geotechnical services, the LPA representative, ADOT PM and Engineer shall be consulted on the type of work necessary for the project.

The Consultant shall, but is not limited to:

1. Provide Equipment

Provide drilling rig(s) and/or backhoe(s) or other excavating equipment to advance borings/excavate trenches or test pits

a) Drilling rig shall be sized to appropriately accomplish the work in a reasonable length of time. For this contract, the contractor should have, as a minimum, a CME-55 or equivalent. The use of skid type rig or specialized equipment will require prior approval.

b) The backhoe or other equipment shall be capable of safely excavating a minimum trench depth of 12 feet.

d) All equipment shall be in good working order and satisfactory to the Engineer.

2. Provide Personnel Requirements

The Consultant will be informed in the notification whether a 2 man crew or a 3 man crew will be required. The Consultant shall use the personnel originally proposed for this contract. No other personnel shall be used without prior approval. The Engineer may require, in writing, the removal from the work of any personnel not considered qualified to perform the work responsibilities assigned to the Consultant.

2.1 Provide Driller and Helper (2 man crew)

Typically, a driller shall have at least 4 years of experience in soil and rock exploration for pavement or foundation design. The experience shall be within 5 years of the start work date.

2.2 Provide Driller, Helper and Field Engineer/Geologist (3 man crew)

For this type of work, typically the Engineer/Geologist shall have a least 2 years full time experience (1 year of which must be field experience) in classifying and logging soils and rock and in obtaining classifying and logging samples obtained in the drilling process and by backhoe excavation.

The consultant must meet the minimum requirements established in the approved labor classification list and described in the ECS information bulletin 13-02 found in the ECS website. The Engineer at the discretion of the State may waive this requirement.

3. Obtain Permits/Clearances

All necessary licenses, permits, permits utility clearances, etc. will be obtained by the Consultant. Right of way or rights of entry will be provided by the Department or local entity unless otherwise directed by the Engineer or representative. The Consultant shall comply with all provisions required. All permitting required by the Arizona Department of Water Resource (ADWR) shall be obtained by the Consultant when exploration plans meet the ADWR's criteria for groundwater conflicts. All permitting required by the Arizona Department of Environmental Quality (ADEQ) shall be obtained and implemented by the Consultant when exploration plans meets the ADEQ's criteria for water quality regulations and permits. The consultant shall comply with all local air quality and dust control rules, regulations and ordinances that apply to any work performed pursuant to the contract.

4. Perform Investigation

As a rule, the investigation plan will be provided by the Department, unless otherwise stated by the Engineer. It may be desirable in some cases to change the location of a boring or test hole to improve access, avoid utilities or to generally improve operating conditions. Any such changes shall be made only upon approval by the Engineer. No payment will be made for holes abandoned or relocated without prior approval. If the Consultant is requested to plan an investigation, said plan shall be reviewed with the Engineer before mobilization.

The Engineer shall be notified upon completion of the first boring or test hole. The investigation plan may be modified at this time. The use of a ring sampler, in lieu of a Standard Penetration sampler, will be at the discretion of the Engineer.

The Consultant shall be responsible for laying out boring or test hole locations in the field and advancing the boring or test hole to the required depth. In drilling operations, refusal, in lieu of required depth, may be acceptable by the Engineer. Less than 1 inch of advancement after 15 minutes with reasonable back pressure may be defined as refusal. The Engineer shall be informed on the same or next working day if refusal, as defined above, is encountered.

The Consultant shall assume the risk and responsibilities for carrying borings/excavations through boulders, rubble or other obstructions encountered. Every effort shall be made to penetrate boulders or obstructions by coring. Chopping or drilling will require prior approval by the Engineer. Abandoning the hole and drilling another hole nearby will require prior approval by the Engineer. No payment will be made for abandoned holes.

a) Obtain Samples – The Consultant shall obtain samples as stipulated herein and in the investigation plan. The sample amount shall be sufficient to perform the required tests including but not limited to R-value, proctor density, pH, resistivity, gradation, Atterberg limits, direct shear, consolidation, triaxial shear and unconfined compression.

   For soil formations, a separate sample shall be taken of every significant stratum. In drilling operations, a separate sample shall be taken at each 5 ft. increment or every significant strata change, whichever provides the most samples. The use of a ring sampler in lieu of a Standard Penetration sampler will be at the discretion of the Engineer.

   A written log of the depth from which the sample came shall accompany each sample. Sample tickets will be supplied by the Department. Identification of samples shall be in accordance with current ADOT Materials Preliminary Engineering and Design Manual.

   All sampling equipment used shall be in accordance with ASTM D 1586.

   Continuous rock core drilling will be required in rock formations. Core drilling shall be in accordance with ASTM D 2113, except that the minimum core diameter shall be 1 inch.

   Core samples shall be prepared and shipped in accordance with the requirement of ASTM. The rock quality designation and percentage core recovery shall be determined and recorded for each core run.

   All excavations shall be accomplished and maintained in accordance with current OSHA Standards. Blasting will not be permitted.

   The plan area of backhoe excavations shall be the minimum necessary to provide a level bottom surface, and to allow personnel to safety enter the excavation for visual observation and to obtain samples.

   If backhoe test pit excavations must be left open and no immediately backfilled, they shall be made inaccessible.

   In-situ density tests will be required in backhoe test pit excavations, as directed in the investigation plan.

b) Sample Storage and Shipping

   All samples shall be properly packed, identified and delivered to the location directed, within the work week they are taken. The requirement of ASTM D 4220 shall be followed.

The cost of storage and delivery shall be included in the hourly rate and no separate payment shall be made.

c) Backfilling, Clean-up and Site Restoration

All borings shall be filled to the original elevation with spoil or other material placed and compacted to produce minimum settlement. ADWR abandonment requirements shall be complied with where applicable.

All borings or core holes in asphalt concrete or Portland cement concrete pavement shall be filled and compacted to within 6 inches of the surface with cold mix asphaltic concrete. The top 6 inches shall be filled with the same type material that was removed from the surface. All backfilling shall be done in a workman like manner to the satisfaction of the Engineer. Any work considered unacceptable shall be redone at no cost to the Department.

All sites shall be thoroughly cleaned up and restored as close as possible to the original condition. This shall be accomplished as soon as practicable following completion of boring or excavation operations at each location.

No separate payment will be made for backfilling or cleaning up. The Consultant shall comply with all permit provisions (i.e. Forest Service, ADWA, ADEQ, etc.)

d) Field Logs and Forms

Prior to the start of work, the Consultant shall submit sample boring logs, test pit or test data forms for approval.

A continuous complete field record for each boring or test pit shall be kept. The following information shall be included as a minimum:

- Start date of boring/test hole
- Completion date of boring/test hole
- Boring/hole number
- Elevation, within ± 0.2 feet
- Location, in terms of project Stationing or Milepost, within ± 3 feet
- Name of field engineer and driller/operator
- Description and quantity of any casing used
- Description and diameter of augers
- Depth of top of each material encountered
- Depth of bottom of boring or test pit
- Description of each material encountered in accordance with ASTM D 2488. In cases where advancement methods and equipment result in sever degradation of the material being sampled, the field engineer shall note that the material descriptions are based on observations and engineering judgments from disturbed samples.
- Groundwater level (may require monitoring)
- Record of SPT blow counts (blows/1 foot)
- Record of casing blow counts or Becker blow count, if applicable
- Drill rates (minutes/1 foot) and method of drilling

A legible copy of all field logs shall be submitted to the Engineer at the end of each working week. Each field log shall be signed by the field engineer.

The Engineer will review the logs and records for completeness and accuracy and may return the logs for revision, if required.

5. Install Slope Instrumentation (Inclinometers, Piezometers, etc.)

The work shall consist of the drilling and casing of test holes of varying depths and in various unconsolidated material, which may include rock fill, at locations designated by the Engineer. The test holes shall have a minimum diameter of 7.5 inches. The casing shall be 3-3/8 inches outside diameter PVC Slope Indicator or equal slope inclinometer or piezometer casing capped at the bottom end. Smaller casing and hole size may be used with the Engineer's approval, depending on the application.

Casing joints shall be cemented to create a water tight seal. The casing must be grouted full depth with a sand/cement grout. Soil samples must be taken at 5 feet intervals or as directed by the Engineer. In the case of unsaturated conditions, the test hole may not be drilled with water, in order to prevent saturation of embankments, unless the Consultant can satisfactorily demonstrate the use will not compromise the stability of the feature being drilled. The test hole may be kept open with steel casing, gel or mud while drilling.

If the Consultant cannot complete the drilling of the holes to the required depth, no payment will be made for the work.

All tools, bits, casing, including inclinometer casing or piezometer casing, supplies and equipment for drilling, soil sampling, setting casing and grouting shall be furnished by the Consultant.
The basis of payment shall be per lineal foot, and will be negotiated for each installation.

6. Testing Requirements

a) General – Testing requirements, if any, will be provided by the Department.

All tests shall be performed in accordance with the applicable ADOT, AASHTO or ASTM Standards unless otherwise directed.

All testing shall be performed by a laboratory listed in ADOT's "Directory of Approved Materials Testing Laboratories." A current directory can be viewed at http://www.azdot.gov/Highways/Materials/quality_assurance.asp Test Procedures shall only be performed by a laboratory that is accredited in that specific test procedure.

b) Test Procedures – The following tests are to be performed in accordance with the current ADOT, AASHTO or ASTM Standards, unless otherwise noted:

| Test | ADOT, AASHTO or ASTM Designation |
|---|---|
| Water Content | AASHTO T 265 |
| Grain Size Analysis | ARIZ 201, ARIZ 248 |
| Hydrometer Analysis | AASHTO T 88 |
| Dry Unit Weight | Measured Volume |
| Atterberg Limits (Liquid Limit and Plastic Limit) | AASHTO T 89, T 90 |
| Direct Shear Test (on in-situ or compacted specimen) | ARIZ 249, T 236 |
| Unconfined Compressive Strength of Soil | AASHTO T 208 |
| Unconfined Compressive Strength of Intact Rock Core Specimens | ASTM D 7012 |

| | |
|---|---|
| "R"-value of Compacted Soil Test | AASHTO T 190 |
| Moisture-Density Relations (Proctor) | ARIZ 225, ARIZ 226<br>ARIZ 227, ARIZ 245 |
| Determination of pH and Resistivity of Soil (Resistivity-follow guidelines of manufacturer of test apparatus) | ARIZ 236 |
| Sulfate Content of Soil | ARIZ 733 |
| Chloride Content of Soil | ARIZ 736 |
| Determination of pH and Soluble Salts of Soil | ARIZ 237 |
| In-Place Density by Sand-Cone Test | ARIZ 230 |
| In-Place Density by Nuclear Gauge | ARIZ 235 |
| In-Place Density by Rubber Balloon Method | ARIZ 223 |
| One Dimensional Consolidation Test | AASHTO T 216 |
| One Dimensional Swell or Settlement Potential of Cohesive Soils | ASTM D 4546 |
| Triaxial Compression Cu with Pore Pressure Measurements | AASHTO T 297 |
| Los Angeles Abrasion | AASHTO T 96 |

7. Final Report

The Department will notify the Consultant when a Final Report is required. The Consultant shall present all final boring logs, field and laboratory test data in a typed form. Three (3) printed copies of this report are to be submitted; the reports shall be standard 8-1/2 by 11-inch size; in addition, a total of 23 copies of the final report in Portable Document Format (PDF) recorded on CD-ROMs are to be submitted as follows: one printed copy and 1 copy of PDF on CD-ROM of this report shall be submitted to ADOT PM. Two printed copies and 22 copies of PDF on CD-ROM of this report shall be submitted to the ADOT Geotechnical Section for distribution to Contracts and Specifications Section and Geotechnical Section.

The report shall include:

a) All subsurface exploration data, including scope and purpose of the investigation, surface conditions, historical information, geology of area, investigation procedures, final exploration logs, subsurface soil/rock profile, groundwater information and boring plan.

b) All laboratory and in-situ test results

c) A discussion of conditions which may be encountered

d) Specific recommendations for design

e) Recommended geotechnical Special Provisions

When a Materials Design Memorandum and a Pavement Design Summary are required, the design process, content and format shall conform to the Materials Preliminary Engineering and Design Manual.

Whether or not a Final Report is required, the Consultant shall furnish, as a minimum, two (2) copies of final logs, field and laboratory test data, and 2 copies of the final logs in PDF on CD-ROMs.

The Consultant shall furnish on request copy-ready plan sheets with boring layout and final logs for Foundation Data Sheets. These will be required for all bridge foundation projects in which the Consultant has provided drilling services. All sheets shall be stamped by an Arizona registered professional engineer with the firm.

8. Inspection of Work

The Engineer or his representative will not be present on the project site on a full-time or part-time basis; however, representatives of the Department may, at any time during the project duration, review and inspect the project activities and facilities. The Engineer shall be notified when 50% of the borings/test pits have been completed.

9. Peer Review/Monitoring

a) This item calls for an experience engineer with the Consultant to:

1) Direct the monitoring of large diameter test shaft activities and to write reports documenting such. Field monitoring may be done by a Field Engineer/Geologist as stipulated in 2.2.

2) Perform technical (peer) reviews of bridge foundation analyses/designs that have been prepared by ADOT staff or others.

3) Perform technical (peer) reviews of slope (both soil and rock) stability analyses/designs that have been prepared by ADOT staff or others.

b) Typically, the minimum experience requirements are 5 years of general geotechnical engineering experience, 3 years of which must be in the specialty area of subsection 1), 2), or 3) above. The consultant must meet the minimum requirements established in the approved labor classification list and described in the ECS information bulletin 13-02 found in the ECS website.

# ARIZONA DEPARTMENT OF TRANSPORTATION
## ENGINEERING CONSULTANTS SECTION
## Projected Contract Labor Classification Selection Form

Complete this form indicating projected Labor Classifications for this contract. Upload the completed form into eCMS along with the project Scope of Work (SOW) and federal authorization for contract advertisement requests.

**Contract:** 2014-006

| | General/Engineering | Select ☑ |
|---|---|---|
| 1 | Administrative | ✓ |
| 2 | Project Administrator | |
| 3 | Architect | |
| 4 | Architect - Senior | |
| 5 | CADD Technician | ✓ |
| 6 | Cost Estimator | |
| 7 | Cost Estimator - Sr. | |
| 8 | Designer | ✓ |
| 9 | Designer - Sr. | ✓ |
| 10 | Engineer | ✓ |
| 11 | Engineer - Sr. | ✓ |
| 12 | Project Engineer | ✓ |
| 13 | Project Engineer - Sr. | ✓ |
| 14 | Geologist | ✓ |
| 15 | Geologist - Sr. | ✓ |
| 16 | GIS Analyst / Technician | ✓ |
| 17 | GIS Analyst / Technician - Sr. | ✓ |
| 18 | Graphic Designer | ✓ |
| 19 | Graphic Designer - Sr. | |
| 20 | Project Principal | ✓ |
| 21 | Project Manager | ✓ |
| 22 | Project Manager - Sr. | ✓ |
| 23 | Arborist | |
| 24 | Registered Landscape Architect | ✓ |
| 25 | Registered Landscape Architect - Sr. | |
| 26 | Transportation Planner | ✓ |
| 27 | Transportation Planner - Sr. | |
| | **CONSTRUCTION** | **Select ☑** |
| 28 | S1 (Inspection Office) | |
| 29 | S4 (Inspection Office, Lab, Survey, Permits, Traffic Signals) | |
| 30 | S5 (Inspection Office, Lab, Survey, Permits, Traffic Signals) | |
| 31 | S6 (Inspection Office, Lab, Survey, Permits, Traffic Signals) | |
| 32 | S7 (Inspection Office, Lab, Survey, Permits, Traffic Signals) | |
| 33 | S9 (Inspection Office, Lab, Survey, Permits, Traffic Signals) | |
| 34 | Resident Engineer | |
| 35 | Resident Engineer - Sr. | |

| | ENVIRONMENTAL | Select ☑ |
|---|---|---|
| 36 | Air Quality Specialist | ✓ |
| 37 | Associate Archeologist | |
| 38 | Archeologist | ✓ |
| 39 | Archeologist - Sr. | ✓ |
| 40 | Architectural Historian / Historian | ✓ |
| 41 | Associate Biologist | |
| 42 | Biologist | ✓ |
| 43 | Biologist - Sr. | ✓ |
| 44 | Cultural Principal Investigator | ✓ |
| 45 | Cultural Resource / Archeological Technician | ✓ |
| 46 | Environmental Coordinator / Program Manager | ✓ |
| 47 | Associate Environmental Planner / Scientist | |
| 48 | Environmental Planner / Scientist | ✓ |
| 49 | Environmental Planner / Scientist, Sr. | ✓ |
| 50 | HazMat Specialist | ✓ |
| 51 | Noise Specialist | ✓ |
| | **SURVEY** | **Select ☑** |
| 52 | Aerial Photographer | |
| 53 | Aircraft Pilot | |
| 54 | Photogrammetrist | |
| 55 | Registered Land Surveyor | ✓ |
| 56 | Registered Land Surveyor - Sr. | ✓ |
| 57 | Survey Technician | ✓ |
| 58 | Survey Party Chief | ✓ |
| | **RIGHT OF WAY (ROW)** | **Select ☑** |
| 59 | Acquisition Agent | ✓ |
| 60 | Acquisition Agent - Sr. | ✓ |
| 61 | Relocation Agent | ✓ |
| 62 | Relocation Agent - Sr. | ✓ |
| 63 | Right of Way Plans Technician | ✓ |
| 64 | ROW Project Coordinator | ✓ |
| 65 | ROW Project Coordinator - Sr. | ✓ |
| 66 | Title Examiner | |
| 67 | Title Examiner - Sr. | |
| | **MISCELLANEOUS** | **Select ☑** |
| 68 | Technician | ✓ |
| 69 | Supplemental Services Consultant | |
| 70 | Other/ADOT Pre-Approved: Must include name of proposed classification, definition of duties and required education, experience and registration/certification. | |